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Gleanings in Bee Culture



Photographed by Eugene J. Hall, Oak Park, ILL UNIVERSITY

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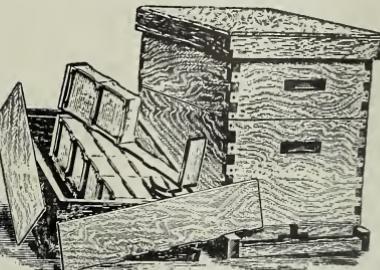
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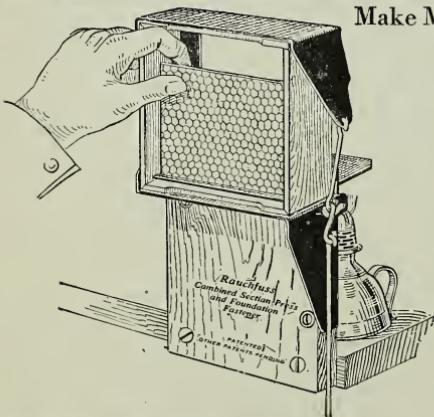
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The Rauchfuss Combined Section Press and Foundation-fastener enables the beekeeper to fold sections and put in foundation at one operation. It is guaranteed to do more and better work than any other device on the market. Any child can operate it. Made for $4\frac{1}{4} \times 4\frac{1}{4}$ sections and also for 4×5 sections. Price \$3.00, complete with lamp and treadle, delivered postpaid anywhere in the United States.

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Pennsylvania, New Jersey, New York, and New England states beekeepers should not delay putting in their stock of supplies as early as possible. The eastern railroads are so heavily laden with freight it is indefinite as to just how long it will take to receive goods after they leave the factory or dealer. Ordering your requirements a month earlier than usual will cost no more, and will assure you of having supplies on hand when the time comes to use them. This will allow for any delay which might occur while in transit.

As never before we are especially prepared to take care of the beekeepers' orders and give prompt service. Above all, we assure the purchaser of satisfaction, and we never consider a deal closed until we feel sure our customer has received the guarantee of satisfaction which goes with every package, crate, or box leaving our factory.

Those beekeepers who have not received a copy of our new RED CATALOG should not hesitate to send for a copy. It gives descriptions and prices of all the beekeepers' supplies, from the requirement of the smallest to that of the largest beekeeper. A post card will bring it to your address free.

Red Catalog, postpaid.

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"Simplified Beekeeping," postpaid.

W. T. FALCONER MFG. COMPANY, FALCONER, NEW YORK

where the good beehives come from

HONEY MARKETS

The prices listed below are intended to represent, as nearly as possible, the average market prices at which honey and beeswax are selling at the time of the report in the city mentioned. Unless otherwise stated, this is the price at which sales are being made by commission merchants or by producers direct to the retail merchants. When sales are made by commission merchants the usual commission (from five to ten per cent), cartage, and freight will be deducted; and in addition there is often a charge for storage by the commission merchant. When sales are made by the producer direct to the retailer, commission and storage and other charges are eliminated. Sales made to wholesale houses are usually about ten per cent less than those to retail merchants.

GRADING RULES OF THE COLORADO HONEY-PRODUCERS' ASSOCIATION, DENVER, COL., FEBRUARY 6, 1915.

COMB HONEY

FANCY.—Sections to be well filled, combs firmly attached on all sides and evenly capped except the outside row next to the wood. Honey, comb, and cappings white, or slightly off color; combs not projecting beyond the wood; sections to be well cleaned. No section in this grade to weigh less than 11 oz. net or 13 $\frac{1}{2}$ gross. The top of each section in this grade must be stamped, "Net weight not less than 12 $\frac{1}{2}$ oz."

The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

NUMBER ONE.—Sections to be well filled, combs firmly attached, not projecting beyond the wood, and entirely capped except the outside row next to the wood. Honey, comb, and cappings from white to light amber in color; sections to be well cleaned. No section in this grade to weigh less than 11 oz. net or 12 oz. gross. The top of each section in this grade must be stamped, "Net weight not less than 11 oz."

The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

NUMBER TWO.—This grade is composed of sections that are entirely capped except row next to the wood, weighing not less than 10 oz. net or 11 oz. gross; also of such sections as weigh 11 oz. net or 12 oz. gross, or more, and have not more than 50 uncapped cells all together, which must be filled with honey; honey, comb, and cappings from white to amber in color; sections to be well cleaned. The top of each section in this grade must be stamped, "Net weight not less than 10 oz."

The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

Comb honey that is not permitted in shipping grades

Honey packed in second-hand cases.

Honey in badly stained or mildewed sections.

Honey showing signs of granulation.

Leaking, injured, or patched-up sections.

Sections containing honey-dew.

Sections with more than 50 uncapped cells, or a

less number of empty cells.

Sections weighing less than the minimum weight.

All such honey should be disposed of in the home market.

EXTRACTED HONEY

This must be thoroly ripened, weighing not less than 12 pounds per gallon. It must be well strained, and packed in new cans; sixty pounds shall be packed in each five-gallon can, and the top of each five-gallon can shall be stamped or labeled, "Net weight not less than 60 lbs."

Extracted honey is classed as white, light amber, and amber. The letters "W," "L A," "A" should be used in designating color; and these letters should be stamped on top of each can. Extracted honey for shipping must be packed in new substantial cases of proper size.

STRAINED HONEY

This must be well ripened, weighing not less than 12 pounds per gallon. It must be well strained; and, if packed in five-gallon cans, each can shall contain sixty pounds. The top of each five-gallon can shall be stamped and labeled, "Net weight not less than 60 lbs." Bright clean cans that previously contained honey may be used for strained honey.

Honey not permitted in shipping grades

Extracted honey packed in second-hand cans.

Unripe or fermenting honey weighing less than 12 lbs. per gallon.

Honey contaminated by excessive use of smoke.

Honey contaminated by honey-dew.

Honey not properly strained.

NATIONAL BEEKEEPERS' ASSOCIATION GRADING RULES

Adopted at Cincinnati, Feb. 1913

Sections of comb honey are to be graded: First, as to finish; second, as to color of honey; and third, as to weight. The sections of honey in any given case are to be so nearly alike in these three respects that any section shall be representative of the contents of the case.

I. FINISH

1. Extra Fancy.—Sections to be evenly filled, combs firmly attached to the four sides, the sections to be free from propolis or other pronounced stain, combs and cappings white, and not more than six unsealed cells on either side.

2. Fancy.—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white to slightly off color, and not more than six unsealed cells on either side, exclusive of the outside row.

3. *No. 1.*—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white to slightly off color, and not more than 40 unsealed cells, exclusive of the outside row.

4. *No. 2.*—Combs not projecting beyond the box, attached to the sides not less than two-thirds of the way around, and not more than 60 unsealed cells exclusive of the row adjacent to the box.

II. COLOR

On the basis of color of the honey, comb honey is to be classified as: first, white; second, light amber; third, amber; and fourth, dark.

III. WEIGHT

1. *Heavy.*—No section designated as heavy to weigh less than fourteen ounces.

2. *Medium.*—No section designated as medium to weigh less than twelve ounces.

3. *Light.*—No section designated as light to weigh less than ten ounces.

In describing honey three words or symbols are to be used, the first being descriptive of the finish, the second of color, and the third of weight. As for example: Fancy, white, heavy (F-W-H); No. 1, amber, medium (1-A-M), etc. In this way any of the possible combinations of finish, color, and weight can be briefly described.

CULL HONEY

Cull honey shall consist of the following: Honey packed in soiled second-hand cases or in badly stained or propolized sections; sections containing pollen, honey-dew, honey, honey showing signs of granulation, poorly ripened, sour, or "weeping" honey; sections with comb projecting beyond the box or well attached to the box less than two-thirds the distance around its inner surface; sections with more than 60 unsealed cells, exclusive of the row adjacent to the box; leaking, injured, or patched-up sections; sections weighing less than ten ounces.

KANSAS CITY.—The supply of extracted honey is large, and the demand very light. The supply of comb is not large, and the demand is light. We quote No. 1 white comb, 24 sections per case, \$3.00; No. 2 ditto, \$2.50 to \$2.75; No. 1 amber, \$2.75 to \$3.00; No. 2 ditto, \$2.50 to \$2.75; extracted white, per pound, $7\frac{1}{2}$ to 8; extracted amber, 6 to 7; No. 1 beeswax, 28; No. 2, 25.

C. C. CLEMONS PRODUCE CO.

Kansas City, March 15.

DENVER.—Local demand for comb honey light with ample supply. We are selling in a jobbing way as follows: Fancy white, per case of 24 sections, \$3.15; No. 1, per case, \$2.93; No. 2, per case, \$2.70. White extracted, per pound, $8\frac{1}{2}$ to $8\frac{3}{4}$; light amber, 8 to $8\frac{1}{4}$; amber, 7 to 8. We pay 25 cts. per pound in cash and 27 cts. per pound in trade for clean yellow beeswax delivered to us here at Denver.

THE COLORADO HONEY-PRODUCERS' ASSOCIATION.
Denver, March 20. Frank Rauchfuss, Mgr.

ALBANY.—The honey market is quiet, with considerable comb honey unsold, and will have to be carried over the season. Stocks of extracted are worked down.

Albany, March 18.

H. R. WRIGHT.

INDIANAPOLIS.—The market for honey has been very encouraging the past week, and extracted honey is moving much better than comb honey; however, the honey business is naturally declining as spring draws near. We are quoting choice white comb at \$3.75 to \$4.00 per case; No. 2 white comb at \$3.50. Extracted of the very best quality is selling at $9\frac{1}{2}$ to 11. For wax we are paying 28 cts. cash or 30 in trade, delivered here.

Indianapolis, March 18. WALTER S. PODUER.

ZANESVILLE.—The market is firm, save that western comb, on account of its tendency to granulate, is being offered at some reduction from standard prices. Best white is selling at \$3.50 to \$4.00 a case, according to condition and quantity. There is about a normal demand for extracted, white bringing 9 to 11; off grades correspondingly less. Producers receive for beeswax 28 cents cash, 30 in trade. Selling prices are largely arbitrary, and vary with quality and quantity.

Zanesville, March 20.

E. W. PEIRCE.

CHICAGO.—During the past three weeks there has been quite a free movement of honey, and stocks have been greatly reduced, as also the prices, because holders have become anxious to realize, and much of the honey has shown a tendency to granulate. Fancy comb honey is held at 15 cts. per lb. and anything off from this grade is from 1 to 5 cts. per lb. less. Extracted honey, white grade, sells at from 7 to 9, according to the kind and quality; but sales have been made mostly at 8, for the clover and basswood, with the amber grades at from 6 to 7. Basswood is selling freely at 80, if clean and of good color.

Chicago, March 18.

R. A. BURNETT & CO.

ST. LOUIS.—We have had very little demand for comb honey lately. Extracted honey is moving a little better with a certain trade, we suppose, on account of the high price of sugar. Stocks of comb honey are quite ample for the little demand, but the market is not overstocked in either extracted honey in barrels or cans, and we believe very little will be carried over into the coming season. We are still getting for No. 1 white comb honey, 4.00 per case; light amber, \$3.25 to \$3.50; amber, \$2.50 to \$2.75; extracted honey in 60-lb. cans, 7 to $8\frac{1}{2}$; amber in barrels, $5\frac{1}{2}$ to 6. Beeswax is firm at 29 for pure; impure and inferior, less.

R. HARTMANN PRODUCE CO.

St. Louis, March 20.

MATANZAS.—The price of honey in this market, at the present time, is 45 cts. per gallon, including barrel.

Matanzas, Cuba, March 22.

ADOLFO MARZOL.

Preparedness Pays Big Dividends

So fortify and equip yourself with our 1916 Catalogue. Now Ready. Write today.

LEWIS' BEEWARE, DADANT'S FOUNDATION,
ROOT'S EXTRACTORS, SMOKERS, ETC.

Anything and everything you might need in Bee Supplies—and at right prices. Ship us your old Combs and Cappings for rendering. Write for terms.

THE FRED W. MUTH CO.

204 Walnut St.

THE BUSY BEE MEN.

CINCINNATI, O.

SAFETY FIRST!

You are always safe in buying Murry's bees and queens. Unexcelled for prolificness, gentleness, and honey-gathering qualities. No disease. Health certificate with each shipment of bees and queens. Three-banded Italians. Goldens. Tested queens any time.

Queens	March 1 to May 1			May 1 to Nov. 1		
	1	6	12	1	6	12
Untested	\$1.00	\$ 5.50	\$10.00	\$.75	\$4.00	\$ 7.50
Tested	1.25	6.50	12.00	1.25	6.50	12.00
Select Tested..	2.00	10.00	18.00	1.50	8.00	15.00

Bees by the pound after May 10. Safe arrival guaranteed to any point within six days of Mathis, Texas. Large orders must be placed 30 days in advance of shipment, accompanied by 25 per cent advance payment. This means orders amounting to \$50 and up. If queens are wanted, add price of queen to price of pound package.

Pound packages	1	12	50	100
1-pound package	\$1.50	\$16.00	\$ 65.00	\$127.00
2-pound package	\$2.50	29.50	116.50	230.00

H. D. MURRY, MATHIS, TEXAS.

BEE-LINE QUEENS

Three-banded and Golden Italians from Caraway's Prize Stock. I secured the best stock obtainable; long lived, unexcelled as honey-gatherers, and very gentle. No foul brood nor diseases. Safe arrival and satisfaction guaranteed on all queens in the United States and Canada. State Inspector's Health Certificate with each shipment.

ITALIAN QUEENS	Nov. 10 to May 10			UNTESTED QUEENS BY THE 100:		
	1	6	12	April	May	June to November
Untested	\$1.00	\$ 5.50	\$10.00
Tested	1.25	6.50	12.00
Select Tested	2.00	10.00	18.00	Breeders, fair, each, \$5	Extra Select, each, \$10
Pound Packages of Bees	1	6	12	25	50	100
1-lb. packages	\$1.50	\$ 8.50	\$16.00	\$33.00	\$ 65.00	\$127.50
2-lb. packages	2.50	15.00	29.50	58.50	116.00	230.00

Add price of queen to bees by the pound if queens are wanted. Safe arrival guaranteed on bees by the pound within six days of Mathis. Orders booked now, and queens shipped when wanted.

B. M. CARAWAY, MATHIS, TEXAS

You Should Earn \$25 a Colony from Your Bees This Season

This can be accomplished if you have a young prolific queen and a strong colony when the honey-flow arrives. Many beekeepers fail to secure the greatest possibilities from their bees because their colonies are not strengthened and built up early in the season, making it possible for them to take advantage of the honey-flow when it arrives. This should be a good season for clover honey, as weather conditions last year throughout the country were the best for securing a good strong stand of clover we have had for many years.

We now have a large queen-rearing outfit in Florida for the express purpose of supplying you with EARLY QUEENS AND BEES IN PACKAGES. We are breeding from queens that gave a surplus of 300 pounds per colony in a 24-day honey-flow. You should have this strain of bees in your yard, and insure the placing of each of your colonies on a paying basis. We have a large supply of queens at this time, but as orders are coming in rapidly, we recommend that you provide for your requirements early.

ISLAND-BRED ITALIAN QUEENS
Shipments begin March 1.

	1	6	12
Untested	\$1.50	\$ 7.50	\$12.00
Tested	2.00	10.50	18.00
Select Tested	3.00	15.00	24.00

Tested Breeding Queens, \$5.00 and \$10.00 each

PRICES ON BEES BY THE ROUND F. O. B. SHIPPING POINT. Shipment begins May 10.

	1	6	12
½-lb.	\$1.50	\$ 7.50	\$12.00
1-lb.	2.00	10.50	18.00
2-lbs.	3.00	15.00	27.50
3-lbs.	4.00	21.00	36.00
5-lbs.	5.50	27.50	50.00

(These prices are without queens)

Prices on Nucleus and Full Colonies without Queens. Shipping Now.

One-frame Nucleus	\$2.00	Three-frame Nuclei	\$4.00	Eight-frame Colony ..	\$ 8.50
Two-frame Nuclei	3.00	Five-frame Nuclei	5.00	Ten-frame Colony ..	10.00

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9 gals of sprays from one nozzle. Starts or stops instantly—saves solution and work. Send for catalog. Agents wanted.
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Gleanings in Bee Culture

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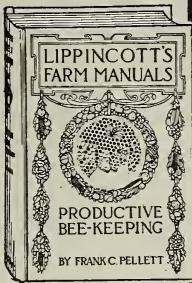
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135 illustrations. 316 pages. Octavo. Handsome cloth. \$1.50 net. Postage or expressage extra.

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The A. I. Root Co., Medina, O.

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ACT OF AUGUST 24, 1912.

Editor, E. R. Root, Medina, Ohio; Managing Editor, H. H. Root, Medina, Ohio; Business Manager, J. T. Calvert, Medina, Ohio; Publisher, The A. I. Root Co., Medina, Ohio.

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(Signed) J. T. CALVERT, Business Manager.

Sworn to and subscribed before me this 23d day of March, 1916.

(Signed) FRANK SPELLMAN,
[SEAL] Notary Public.
(My commission expires Feb. 17, 1917.)

ON THE BOOKSHELF

Now that so many beekeepers own automobiles, and so large a proportion of the automobiles have electric starting and lighting systems, we should like to call attention to a new book by Victor W. Page, "Starting, Lighting, and Ignition Systems." All automobiles and trucks use electrical ignition, in fact; and since this book gives a very comprehensive review of all the ignition systems in common use it is a valuable addition to the automobilist's library. Like "The Model T Ford Car," by the same author, it is profusely illustrated with specially made drawings and halftone engravings. The book may be obtained from The Norman W. Henley Pub. Co., New York. Price \$1.50.

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We invite your patronage.

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DEPOSIT BANK CO.
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**A.T. SPITZER, Pres.
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ASSETS OVER ONE MILLION DOLLARS

A KIND WORD AND SOMETHING MORE.

Mr. A. I. Root:—I feel very well acquainted with you, altho I have never seen you. I appreciate the great work you have done, and are doing in helping to lead the people upward into the "safe and sane" atmosphere you enjoy so much. There are so many evils that you can barely do justice to all of them; but I wish you would give a little attention to those "farm" and "home" newspapers that prate so much about their moral influence, and the "elevation" of the farmer and his family, while selling their space for the advertisement of tobacco and cigarette tobacco. I assure you I always feel insulted by those advertisements when I open up a paper that comes into our home pleading "moral influence."

Mantua, O., Feb. 26.

D. B. HUSTED.

Gleanings in Bee Culture

DEVOTED TO HONEY, BEES, AND HOME INTERESTS

Established 1873

A. L. BOYDEN, Advertising Manager

Issued semi-monthly

ADVERTISING RATES

Twenty-five cents per agate line flat. Fourteen lines to the inch.

SPACE RATES. To be used in one issue: Fourth-page, \$12.50; half-page, \$25.00; page, \$50.00.

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Preferred position, inside cover, 50 per cent additional.

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Reading notices, 50 per cent additional.

Cash-in-advance discount, 5 per cent.

Cash discount if paid in ten days, 2 per cent.

Bills payable monthly.

No medical or objectionable advertising accepted.

Column width, $2\frac{5}{8}$ inches.

Column length, 8 inches.

Columns to page, 2 (regular magazine page).

Forms close 10th and 25th of each month.

Address Advertising Department, Gleanings in Bee Culture, Medina, Ohio.

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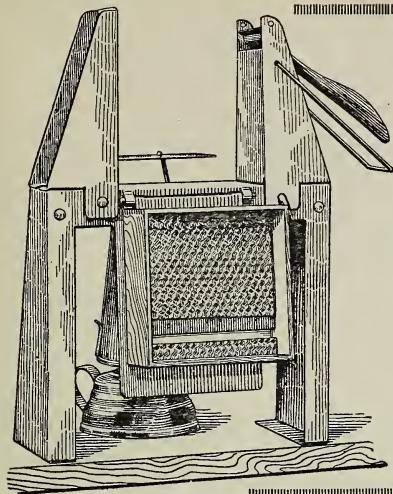
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Woodman's Section-fixer Gold Medal

for the finest comb honey at the recent Michigan fiftieth anniversary convention was won by Floyd Markham, of Ypsilanti, Michigan. He says:

"We have several kinds of machines for folding sections and putting in the starters, but since we got one of your Section Fixers, about two years ago, no other machines for the purpose are used in our shop. It pays to use bottom starters, and your Section Fixer is the only machine that I know of that will do the job at any rate of speed and do it right."

DO YOU KNOW that with this machine you always handle large pieces of foundation, which makes the putting in of bottom starters easy? Special circulars will tell you all about it. Price \$2.75 with lamp and one form block, shipping weight 5 pounds, postage extra.

**A. G. WOODMAN COMPANY
GRAND RAPIDS, MICH.**

Established 1885



It will pay you to get our 64-page catalog and early-order discount

Beekeepers' Supplies

The A. I. Root Co's brand. A good assortment of supplies for prompt shipment kept in stock. Let us hear from you; full information given to all inquiries. Beeswax wanted for supplies or cash.

John Nebel & Son Supply Co.
High Hill, Montgomery Co., Mo.



Best by test. Prices on request.

"Superior" Foundation

Thousands of pounds ready for prompt shipment. Save 25 to 50 per cent by having your beeswax manufactured into Weed-process Foundation.

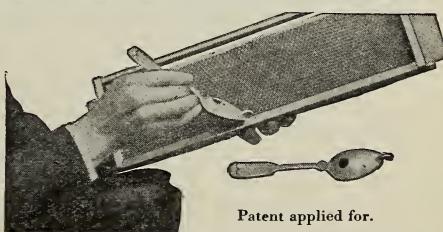
Superior Honey Co., Ogden, Utah
"Everything in bee supplies"

The Leading House in New England for Beekeepers' Supplies and a Prompt Shipment Promised

I also have some nice grade Vermont Pure Maple Syrup which I can offer at \$1.25 per gallon, f. o. b. my station.

Robert G. Coombs
Guilford, Vt.

Martine Foundation Fastener



Patent applied for.

Latest and best device invented for fastening foundation securely to the frame or section with a tiny stream of hot wax.

Prevents breaking down of foundation with the weight of the bees.

Saves expense, time, and labor.

One filling of the fastener is sufficient to fasten the foundation in five frames and can be done in one-third the time required by any other device.

Price 50 cents, postage prepaid. Satisfaction guaranteed.

On Sale Only by

J. P. Martine & Son

Root's Beekeepers' Supplies at Root's Prices

206 Ea. Jefferson St. Louisville, Ky.

PENNSYLVANIA BEEKEEPERS

Our 1916 catalogs now out. Postal will bring you one. Root's goods at Root's prices. Prompt shipment.

E. M. Dunkel, Osceola Mills, Pa.

BEE SUPPLIES Send your name for new 1916 catalog.

Dept. T, CLEMONS BEE SUPPLY CO.,
128 Grand Avenue, Kansas City, Mo.

Preparedness!

Your success this season, Mr. Beekeeper, depends on being ready. You need to buy your supplies now.

Root's Goods mean Real Preparedness.

We sell them in Michigan. Send for catalog. Beeswax wanted---30 cts. cash, 32 cts. in trade; wax delivered to Lansing.

M. H. Hunt & Son, 510 Cedar St. N., Lansing, Mich.

“If Goods are Wanted Quick Send to Indianapolis”

Indications just now are very favorable for a good season; but we are, of course, at the mercy of the weather conditions. A good season means an excessive demand for the line which we handle, and we mention this, urging our friends to place their orders before the goods are really needed, that none may be disappointed.

We carry Root's goods and sell at their prices; and considering this as a shipping-point, we can save you time and freight by having your orders come to this house.

If you are new to the business we should like to explain that Root's goods are the very best that can be produced. If you have been using THE ROOT LINE you will recognize the truthfulness of the above and will want more of the same goods.

Promptness in filling orders is the motto here. We also give small orders the same careful attention that are given to large orders.

Let us have the pleasure of mailing you our free catalog.

Walter S. Pouder, Indianapolis, Ind.
873 Massachusetts Avenue

NOW IS THE TIME

To order your supplies, and thus
have every thing in readiness for
the spring.

We carry a full line of Root's Goods at all times, and are always prepared to fill any and all orders on short notice.

Hives, supers, frames, sections, comb foundation, section-presses, foundation-fasteners, queen-excluders, queen and drone traps, swarm-catchers, feeders, honey and wax extractors, capping-melters, honey-knives, honey-tanks, honey-packages, shipping-cases, bee-escapes, bee-veils, bee-gloves, bee-brushes, smokers—in short, everything the beekeeper requires for the proper conduct of an apiary.

C. H. W. Weber & Company, Cincinnati, O.

2146 Central Avenue

Don't Buy BEE SUPPLIES

Until You See
Our Catalog

Address

F. A. SALISBURY, Syracuse, New York
1631 West Genesee St.

Make This a Lewis Year

While you are starting the year's work--getting your bees ready for business--taking stock of supplies on hand and speculating as to what the season's outcome will be

Make This Resolution

That you will use LEWIS BEEWARE this year--because it means success insurance to you--because it means beehives and parts made of the best material by skillful workmen--because it means goods accurately and systematically packed--because it means sections made of bright lumber, highly polished, accurately dovetailed, and scientifically grooved.

Lewis Hives are Built Like Furniture

Lewis Sections are the Kind that do not Break in Folding

You will find LEWIS BEEWARE almost at your own door--thirty distributing houses in the United States and foreign countries. If you have not one of our catalogs send for copy at once.

G. B. Lewis Company, Watertown, Wis., U.S.A.

Exclusive Manufacturers Lewis Beeware

SWEET - CLOVER SEED

Quick Germination

Get our "Scarified" Sweet-clover Seed, which will germinate from 85 to 95 per cent the first year, and thus insure you a good stand right from the start. By sowing our seed you will save money, as it takes only about half as much scarified to sow an acre as ordinary hulled seed.

PRICES	1 lb.	10 lbs.	30 lbs.	100 lbs.	60 lb. a bu.	5 bu. a bu.	10 bu. a bu.	Lbs. per acre
Unhulled White, recleaned	\$0.25	\$2.00	\$5.10	\$16.00		\$4.80	\$4.50	25 to 30
Hulled White, recleaned and scarified	0.30	2.75	6.75	22.50	\$13.50	13.00	12.50	6 to 10
Hulled Yellow, recleaned and scarified (<i>Melilotus Officinalis</i>)	0.20	1.80	5.10	17.00	10.20	9.50	9.00	8 to 12

When seed is wanted by parcel post, be sure to include postage. Bags will be included in the weight in parcel-post shipments.

Please Note.—All of our seed is thoroly cleaned. The scarifying process usually breaks some of the seeds, and we remove all broken seeds. This is an important saving to you. Samples on application.

Dadant & Sons, Hamilton, Illinois

YELLOW SWEET CLOVER.—Many people fail to recognize the value of the biennial yellow sweet clover as a honey-plant. The fact that it blooms two weeks earlier than the white variety makes it especially valuable to the beekeeper. Be sure, however, to get the biennial variety as quoted above.

GLEANINGS IN BEE CULTURE

Published by The A. I. Root Co., Medina, Ohio.

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H. H. ROOT, Managing Editor

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APRIL 1, 1916

NO. 7

EDITORIAL

The Area of Sweet Clover Spreading

WE have already reported how sweet clover is occupying some of the hill country of Kentucky; how land that was good for nothing there is now worth as much as any other farm land, because it will grow sweet clover, honey, pasturage, and hay. What has been taking place in Kentucky is making a start up in the Ozark Mountains. See article by Otis A. Griffith in this issue.

Why Gleanings is Late Again

WE are under contract with a big paper concern which supplies the paper on which GLEANINGS is printed regularly. GLEANINGS is not one of the great magazines, by any means, and yet it takes nearly three tons of paper to get out a single issue. Because of the influence of the great war on the paper industry a carload of paper that should have reached us weeks ago was not shipped until March 24. It is needless to say that we did everything in our power to get paper elsewhere; but under these trying times paper is simply unobtainable on short notice. We hope that our readers will bear with us, for of course matters of this kind are entirely beyond our control.

Prospects for 1916 Honey Crop

PROSPECTS for a large crop of honey the coming season were never brighter. Reports continue to be favorable in California, Colorado, and many parts of the West; and the prospects for clover thruout the United States have not been as good for years. The winter was mild, and there was considerable snow during the latter part of it. So far as we can ascertain, there was little or no winter-killing, and clover honey will be much in evidence next season—that is, provided, of course, we do not get a reversal of last season, and that is, a drouth. If it should be very dry in the late spring or early summer, the clover that is now so

very abundant will be of little or no use to the beekeeper.

Death of One of the Gleanings Office Force

WE are more than sorry to be obliged to record the death of Miss Bessie Templeton, who for more than ten years has been at the head of our subscription department. There is an endless amount of work, correcting and changing addresses, and it is not a small task to see that each subscriber of GLEANINGS receives his copy regularly. Miss Templeton has done this work most faithfully and well.

For a time there is bound to be some delay in entering new names and making corrections necessitated by changes of addresses. We hope our subscribers will be patient with us until this work can be reorganized once more.

Wintering Thruout the United States

IT is a little early yet; but so far the average of the reports regarding wintering are favorable. But one man in Montana says the losses will be the severest in years. Another, from Ontario, Canada, says he is fearful that they will be very heavy. By consulting Weather Bureau maps we find that it has been much colder relatively in Ontario than in that portion of our country south of the Great Lakes. Indeed, up till March the winter was very mild. But March was a little cold, and it is probable that there will be some losses reported yet.

Our own bees, so far as examined (and we have gone over about 300), especially those in the big quadruple cases, have wintered with a loss of 7. None died in the big winter cases except one, and that starved; and not only that, they are in splendid condition—the best we have known in years. This is gratifying. We put the bees in winter quarters very late last fall. The home yard of 174 shows no dysentery and almost no spotting of the hives.

The Distance Bees Fly, Again

In this issue, in his regular department, Mr. J. L. Byer evidently had not read what we said about the flight of bees, page 150, Feb. 15, or he would have seen that he was more nearly in accord with our own views than his statement implied. He finds that there is a condition in a level stretch of country under which bees will fly further than $3\frac{1}{2}$ miles. So have we. He cites one year (1913) when a dearth visited the section in which the apiary was located. Nearly three miles away from the apiary was a strip along a river-bank where alsike clover kept in bloom. The bees went to this strip, and some of them went as far as five miles away. By turning to page 150 it will be seen, in referring to a place where bees ordinarily would not fly more than three-fourths of a mile, we said, "When there is no natural nectar which the bees can gather less than three to five miles away, it is not an uncommon thing for them to fly that far. But they do not always do so."

Testing the Soil for Sweet Clover, and Something about the Largest Grower of it in the United States

IN this issue, page 284, appears an article from Mr. Frank Coverdale, of Delmar, Iowa, on how to test soil—in short, how to make a sure catch of a seeding of sweet clover. Mr. Coverdale is probably the best authority on this plant in the United States; and when the farmers in the country begin to wake up to the value of this wonderful legume as a foliage plant, and want to know something more about it, they will be asking for Frank Coverdale at farmers' institutes all over the United States.

We would suggest that beekeepers and farmers make a general request that Mr. Coverdale be employed next winter to speak at farmers' institutes on how to grow sweet clover. The first state that gets him will be fortunate. Any one who has heard him talk will be convinced that he knows sweet clover from A to Z, for he is the largest grower of it, probably, in the United States.

Summer Beekeeping Course of the Iowa State College

A COURSE in beekeeping is to be offered during the first six weeks of the summer session at the Iowa State College. This course will consist of three lectures and recitations a week, and three periods of practical work a week for the six weeks.

The course will not occupy all the students' time, and they will have opportunity to take other studies that may be related to apiculture in other departments of the college.

This course will fill a long-felt want among the beekeepers of Iowa as well as those interested in beekeeping. It is offered in addition to the new four-year course in apiculture which will be offered for the first time at the beginning of the next college year in September, 1916.

The Iowa State College is to be commended for the recognition it has given to the value of teaching apiculture, and the opportunity it is offering to students who may be interested in the subject of beekeeping. It will offer an opportunity for school-teachers and beginners to obtain information for successful beekeeping, and it will offer to beekeepers the chance to learn the latest and best methods as well as to gain information they could seldom gain from practical beekeeping.

Information in regard to this course may be had by writing to the Director of the Summer Session, Iowa State College, Ames, Iowa.

The Lament of Job, Again; or the Silver Lining to the European Foul-brood Situation

Two articles in this issue will give our friend Job (Holtermann) a few crumbs of comfort. We refer to one by Geo. H. Rea, on page 272, and the other by L. A. P. Stone, page 274. Mr. Rea's method is somewhat drastic in that it involves the destruction of combs or melting them up. According to most of the evidence in hand it appears it is not necessary to do this for European foul brood, altho possibly such drastic means would have to be applied provided *every* trace of the disease is to be wiped out as Mr. Holtermann stipulates.

The article by Mr. Stone promises relief by simply using Dr. Miller's method of cure, dequeening for ten days, and using vigorous Italian stock, and saving the combs. In fact, there are so many reports endorsing Dr. Miller's treatment for European foul brood we really believe that the disease can be handled without very much difficulty provided a good strain of Italians can be secured. In any case, neither Mr. Holtermann nor anybody else need fear that European foul brood will cut down the honey crop.

The Miller treatment, boiled down in a nutshell, quoting from Mr. Stone, is very simple. He covers it in one sentence; name-

ly, "Make the infected colony queenless, and unite as many together as will make one strong colony; and then introduce choice queens after a ten-day period; but first make sure of destroying all queen-cells started by the colonies." He commences treatment at the beginning of the clover harvest.

Another crumb of comfort for Mr. Holtermann is that European foul brood will eliminate all the black colonies and the old-fashioned beekeepers who do not and will not keep up with the times. This will give him a larger field for operations, and, of course, more honey per colony, as there will not be the overstocking as a result of old-time neighbors keeping a few bees and cutting prices. Cheer up, Bro. Holtermann! Don't you see the silver lining in the skies?

The Beekeepers vs. the Smelting Company in Canada Again

ON page 215 we stated that this case had been continued to some time in May. We are now advised that it will come off May 17. It is to be presumed, of course, that the company against whom the action is taken will leave no stone unturned to prove that the gases from their plant or plants are not the cause of the death of the bees in that locality. At all events we are informed that they are taking testimony in Utah, Washington, and California.

It will be remembered that the smelter people in a similar case in Salt Lake Valley, Utah, are said to have settled with the beekeepers in the sum of \$60,000. Of course the attorneys for the beemen will use this case as a precedent.

The beekeepers interested in the case are desirous of hearing from other beekeepers in the United States, particularly the Salt Lake Valley, who can give any information regarding this settlement. If they have anything to offer they are advised to correspond at once with Lewis Minor, Smithville, Ontario.

Regarding the case, Mr. Minor writes:

The smelter people evidently intend putting us in a position to state whether the bees get the poison from the flowers when they ask for particulars, or how else do they come in contact with the gas from their plant? We contend that the bees are killed by flying in contact with their gases in search of honey.

The first summer the smelter was operating, and all the bees were yet in the district, there were over 1000 colonies more than I thought there were, until I looked them all up this winter. Those closest to the smelter died as soon as they began work-

ing in the spring. Further away they lived until the season was over. As soon as the honey quit they likewise were all dead in two weeks. There seems to be something in the gases that attracts bees.

Since the first summer there have been only a few colonies in the place, only what swarms came in from the outside, and what we have taken in for a test. Their flight is always in the direction of the smelter when they are dying.

Lewis Minor.

Smithville, Ont., March 11.

Slightly Exaggerated, Again

THE average reporter, especially if he be a "cub" reporter, in writing about bees, often gets the facts horribly twisted. There has been going the rounds of the press from Los Angeles to New York, and from Portland to Jacksonville, a story to the effect that "E. R. Root, the bee expert," while giving a lecture on bees, was "stung on the mouth" by one of his "untrained bees" and that his "mouth swelled so horribly" that the lecture was "brought to an abrupt close." With almost every newspaper story there is almost always a scintilla of truth; so in this case. While giving a demonstration before the students of the short agricultural course of the Ohio State University, a bee did sting us on the mouth. We brushed it off, scratched out the sting, and went on. The incident was noted by a student who sat in the front seat, and he happened to be a cub reporter for one of the afternoon papers.

The facts are, there was no swelling beyond a slight welt, and we continued our talk and demonstration until the lecture closed. The aforesaid cub reporter added to the other statement that the bees stung Mr. Root and the audience so that there was a "grand rush for the door."

After the lecture had closed, and perhaps two-thirds of the audience were gone, a bunch of boys jammed around the platform and tried to get a taste of granulated honey or honey butter. The jam was so tight that some of the outsiders could not get inside, and one of the outsiders picked up our hat, which contained about a pint of bees, and threw the bees all over the other boys that were fast absorbing the butter. They immediately scattered and a few rushed for the door; but no one was stung. After the laugh was over, some of the outsiders got a taste of granulated honey.

At first we thought we would pay no attention to this oft-repeated yarn; but it is being copied everywhere, in a dozen different versions, presumably as a good joke on the aforesaid "bee expert."

One of our newspaper friends made the remark that this write-up with its "screaming head lines" was worth to the Root Co. thousands of dollars, because the Root Company, Mr. Root in particular, their Airline honey, and bee supplies had been heralded all over the country thru millions of papers. Possibly our newspaper man was right; but this poor little "bee expert" can't help feeling a little humiliated to have it told about him when it wasn't so that he was put out of business by a single bee in one of his recent lectures before the university students of a state university. Josh Billings used to say, "What's the use of knowin' so much when so much you know ain't so?" Some of these cub reporters ought to absorb a little of this truth. But then the truth wouldn't have made a "good story."

The National Convention at Chicago

THE secretary, Mr. F. Eric Millen, page 277 of this issue, gives an official statement of the policies of the new National as recommended and adopted by the delegates at the last meeting in Chicago. As Mr. Millen says, the thing to do is to forget the past, wash the slate clean, and begin all over with the new men who have been in no way identified with the past. If we understand it, no blame is attached to individuals; but the general opinion seemed to be that a single organization national in its scope cannot perform a dual function—educational, commercial, or both—at the same time. The new organization will attempt to do only one thing, work along educational and social lines.

The editor of GLEANINGS during late years has repeatedly refused to take any part in any discussion relative to the policies of the National. In Cincinnati, when he was asked to express even an opinion, he respectfully declined, saying that he did not believe that any bee-journal, supply dealer, or supply manufacturer had any business to dictate or even suggest what any beekeepers' society, national or local, should do; that each organization should be absolutely independent of any commercial interests outside of the mere business of honey production. Any other policy would be fraught with danger.

SOME THINGS THAT WERE SAID AND DONE IN CHICAGO.

We were not present at all the sessions, and therefore can give only a limited review of the proceedings. After the business of the morning had been transacted, the actual discussions began on the afternoon

of the 22d in one of the assembly rooms of the Sherman House. Mr. G. W. Williams, editor of the *Booster*, and secretary of the United Honey Producers of America, delivered an address on teaching the uses of honey in our public schools. Domestic science, he said, was being taken up in all of our best schools; the opportunity was now ripe for the beekeepers of the country to carry the subject of beekeeping and the uses of honey as a food direct to the domestic-science teachers as never before. He found that the various boards were receptive—glad to take up the matter if properly presented. Beekeepers are distributed all over the United States, and it would be an easy matter for each beekeeper to explain the uses of honey by handing out booklets, giving honey recipes to the domestic-science teachers. He closed by giving a statement of the food value of honey as compared with other foods, especially cane sugar. He recommended that these comparisons be presented to the domestic-science teachers and they in turn to the pupils.

Mr. Williams was followed by Mr. E. H. Bruner, of Chicago, on the uses of honey in cooking. There were two important things to be considered—first, a fine quality of honey, and, second, to get the housewife to understand the value of honey as a food. There was no use in getting her interested unless she could be supplied at any time with good honey. The use of honey in baking should be brought to her attention. There are thousands who would eat honey if they could get it and know of it. The business of getting honey into our homes has only just started. It was important now he said to set people to thinking about honey. Let them understand that it can be used in ninety places where sugar is now used. Show them, for example, that honey is good to use on grapefruit and bananas; fine on cold cereals, and excellent in lemonade. He deprecated the policy of selling honey in a retail way at wholesale prices, or cutting prices, as many beekeepers were doing, in order to "introduce the sale of it." Whenever low prices were established it would be difficult to get them up again. The whole policy of cutting prices to the consumer direct was wrong. Our grocers were our best friends. If we protect them, they would protect us.

Mr. R. M. Spencer delivered an address on selling and advertising ripe honey. He recommended that all honey sold should be entirely sealed before being extracted. Such honey would bring good prices, whereas the half-ripened article would bring a low price. He asked for all his honey thoroly ripened,

8 cents, while a neighbor sold an inferior article for 5 cents, as that was all he could get. Honey could be sold by parcel post in suitable containers. He urged a national campaign of advertising. If a fund were raised by assessing only ten cents per hive an enormous amount of money could be raised for advertising. It would create a demand and sale for honey. If beekeepers could only get together on a proposition of this kind it would mean much, because in union there is strength.

The next forenoon we were not present at the sessions; but we were told that Dr. Miller, among others, gave a little talk on olden days. Dr. E. F. Phillips, in response, paid him and some others of the old patriarchs some very high encomiums. We regret that we did not hear this; but apparently all the beekeepers were glad to welcome and see Dr. Miller and his assistant, Miss Emma Wilson. Dr. Miller has arrived at the age of nearly 85. He, with Mr. Wilcox, and Mr. M. M. Baldridge, St. Charles, Ill., carried us back to the olden days. The latter, between sessions, gave us some very interesting history of the Langstroth hive and the introduction of Italian bees into this country. This, doubtless, will be made public some day.

Dr. Phillips, of the Bureau of Entomology, Washington, D. C., in the afternoon delivered a stereopticon address. He showed a number of interesting pictures which he and his associates took; and among the number none called forth more interest than beekeeping in the South Atlantic states. There were more bees and beekeepers there, he said, than anywhere else in the United States. But the trouble was, bees were blacks and kept by the old primitive methods in box hives. He went on to describe some of the superstitions that were rife among some of those plain mountain folks, the purest of the pure Anglo-Saxons, many of whom had never been away from home more than a few miles. Nearly all of them kept a few bees, and they kept them just as their forefathers did three centuries ago. If a death occurred in the family, the bees would have to be "informed" of it. On Washington's birthday their colonies have to be moved an inch or two or else calamity will follow. When asked how many gums they have, they don't know. If the visitor proceeds to count—"No! you mustn't count them, for that would bring trouble. There are about so many," Nough said.

They know nothing of hiving prime swarms back on the old stand, thus retaining the flying bees of the parent colony. The swarms are hived in another gum

placed anywhere, and the parent colony is allowed to swarm itself out of existence. The moth miller is rampant over all that part of the country. It finds these parent colonies, second and third swarms, an easy prey. Practically no returns are received from anything except the prime swarm. The rest die off, either during the winter or are despoiled by the moth miller, or both. If disease should ever get into this Southland, beekeeping would be entirely wiped out because there are nothing but black bees there. Dr. Phillips hoped that some day the state extension workers would be able to instruct these people along the lines of modern methods.

Subsequently in the proceedings a resolution was introduced urging Congress to increase the appropriation now expended for bee culture by \$35,000, making a total of \$50,000 all told. This resolution was subsequently submitted to the Committee on Agricultural Appropriations in Washington with the result that \$5000 increase was granted by the Committee. The whole Agricultural Bill has been temporarily held up in favor of the Military Bill. In the mean time beekeepers should write their congressmen urging their support of the increased appropriation for apiculture. After the Agricultural Bill passes the House it will go before the Senate, with the probability of adoption by that body. Beekeepers should write the senators also. If adopted this will make a total appropriation of \$20,000. The recommendation was made that whatever increase was granted, if any, should be used by the Bureau of Entomology to send experts down into this Southland to instruct those simple mountain folks on how to keep bees in the modern way; how to know bee diseases and how to control them if they ever get a start. It goes without saying that Dr. Phillips will do his part in the Bureau.

Dr. Phillips was followed by Mr. F. G. Snooks, freight claim adjuster in the traffic department of the Erie Railway Co. Mr. Snooks' address was one of the most useful that has been given, provided that the honey-producers of the country will heed his suggestions. We obtained from Mr. Snooks a digest of his address, which we are glad to present here.

Beekeepers and Railroads

I am a beekeeper. Bees are a source of my enjoyment. I am connected with a railroad which is the means of my livelihood, and I should like to call your attention to some interests in common, not as a railroad employee, but as a beekeeper.

First, let us consider the railroads. Railroads have been in the limelight of legisla-

tion for a considerable length of time, not as dictators, but as the target for every politician who thinks his one mission in life is to secure for the people something at the expense of transportation companies.

While we admit that some of this legislation has been beneficial to all concerned, still, if continued, the pendulum will swing past its arc of usefulness and destroy what good has been accomplished. The failure at the present time to sell railroad bonds at par is withholding the placing of large orders for new freight cars.

Beekeepers are interested, with the public at large, in well-maintained and bountiful passenger service, fast freight schedules, fine railroad depots and freight houses, enlargement of terminals to prevent congestion in an adequate supply of fine rolling stock and, in fact, everything that makes a railroad.

A recent new venture on the part of railroads is the organization of bureaus for the prevention of loss and damage claims. This is of vital importance to all shippers. The men handling this matter are chosen for their long terms of commendable service, and it is their duty to see the packages accepted for transportation are strong enough to withstand ordinary handling; that placards on packages requiring special handling are observed, such as "Comb Honey," "Very Fragile," "Handle with Care," "Glass," "This side up," "Inflammable," "Explosive," etc.; to see that large transfers and small stations do not delay, improperly handle, nor poorly stow any freight. Switching in yards, also freight trains, are watched both day and night.

These bureaus not only decrease the loss thru claims, but the prevention of every claim is the elimination of a complaint from a customer to a shipper. Customers have frequently been known to cancel orders due to continued claims resulting from poor packages.

Railroads are frequently rebuked for declining to accept insecure packages at the owners' risk. This is wrong. Take, for instance, an insecure can of extracted honey. All the releases a shipper could execute would not repay a carrier for the loss it would sustain by damage to silk or other high-grade freight loaded in the same car, due to the leaky can.

The successful shipping of comb honey begins with its production. The foundation should first be securely fastened to the sections. The comb honey should then be placed in factory-made shipping-cases (notice I emphasized factory). First, factory-made shipping-cases are the exact size, thus avoiding any play. Furthermore, they are usually equipped with corrugated cushions which absorb much of the shock of transportation without damage to contents.

The shipping-cases should then be placed in carriers with the sections all running the same direction. That is, when the package is finally placed in the car all the sections in

the package will be parallel to the rails of the track.

The carriers should be constructed of sound lumber, secured with cement-coated nails. I much prefer a box to a crate, one which holds from 175 to 200 lbs. The carrier should be cushioned on the bottom with about three inches of straw, and provided at the top with pieces which extend beyond the crate in such a manner as to form handles with which to carry the package.

Stencil your carriers with a mixture of lampblack and oil in the following manner:

From

Stingless Apiary,
Beeville,
Texas.

To

Mr. Eatmore,
Wellsville,
N. Y.

Do not use tags written in ink and fastened on with tacks, as ink blurs, and tags are very easily torn off. Placard your packages "Comb honey, very fragile." There are good advertising features in this method of marking.

For carloads, anticipate your wants. See that suitable cars are used—those free from noxious odors, leaky roofs, and journal-boxes improperly packed. Avoid shipping comb honey in extremely cold weather if possible, and avoid shipping small packages of comb honey.

Do not use old rusty second-hand cans for extracted honey.

Do not load carloads of bees without first ascertaining the time of your departure.

Do not expect trainmen to place your car free from the smoke and gas of the engine unless you request it. They do not understand the peculiarities of bees.

On less than carload shipments patronize railroads that make long haul thru package cars. This avoids unnecessary handling.

Patronize railroads that pay legitimate claims promptly.

Patronize railroads that advertise schedules and maintain them.

File your bills of lading and expense bills. They are valuable, and should not be destroyed.

Remember, continued claims on the same commodity have a tendency to increase the rate.

Tell the railroads your trouble; ask their help; they are your friends.

F. C. Snook,
Inspector for Freight Claim Dept. Erie R. R.
To be continued

A Correction

In our last issue, page 217, we say that Dr. Kohn was elected vice-president of the National. The name should be W. M. Copenhaver, of Helena, Mont.

Dr. C. C. Miller

STRAY STRAWS

Marengo, Ill.



FRED W. MUTH says: "If you scratch the tin first, flour paste will stick as good as any; or if you put sugar in paste you need not scratch the tin. We do it."

WHEN considering the pros and cons as to house-apisaries, don't forget one very important point: The man with a house-apisary loses the health-giving advantage of an outdoor life.

D. W. MILLAR has mailed me a sample of campanilla honey so clear, so excellent in flavor, and so daintily put up, that there ought to be a law against allowing such honey to enter from Cuba to interfere with my trade.

J. E. CRANE is learning. He says, p. 145, "I found what I did not know before, that bees will not build up on sugar syrup as well as on honey." Good! I confess that, until lately, I had not realized—perhaps don't fully realize yet—how much better honey is than sugar for man or bee.

"DON'T be a kicker!" That's another lesson. Huber, you might have drawn from that mouse-and-trap affair, p. 244. Some people are always ready to kick, no matter what happens, only making more trouble for themselves and others. If that mouse, instead of kicking, had lain still and quietly died when caught by the one trap, it would not need to have been killed the second time by the other trap. After all, why was any one so careless as to set two traps so close together?

VERY interesting is the discussion of bees drifting when set on their summer stands, p. 235, by G. C. Greiner. Years ago I had trouble galore from drifting. A hive at one end would have the bees for three colonies, and too often the queen would be killed—nowadays no trouble at all. I can't be sworn just why, but I'll tell you just how we do. On a bright morning when bees can fly they are all brought out of the cellar as rapidly as possible; and before the bees have time to fly, each entrance is closed to one square inch or less. I think that small entrance is the secret of no drifting.

AN OHIO correspondent has abundant dandelion and fruit-bloom, and then an interval of two weeks before clover. He intends to take from a colony the queen with two or three brood, and when the queenless colony has ripe cells to divide it into nuclei which shall grow into full colonies. He asks

whether to begin operations in the early or the clover flow. The earlier he begins, the longer time there is to build up. But unless the colony is very strong in dandelion, better wait for the stronger colony in clover. Moreover, in localities like mine, where bees rarely swarm before clover, the chances are that early queens will be poor, so in such places I'd wait for clover. But where swarming is mostly before clover, I'd begin just before that swarming.

WHAT is the best cellar temperature for bees? We don't know as much about it as we did 25 years ago—at least we're not so well agreed. At that time all agreed that the orthodox thing was 45 degrees; now we're divided in opinion. George H. Rea, p. 208, says 43. I think Dr. Phillips favors 50. Asked why it was that 45 was so generally held years ago, he thought it was because cellars generally happened to be that temperature. Formerly I had good wintering at 45; now my bees do well at 50. No doubt bees may winter fairly well at different degrees, yet no doubt there is some one degree that is *best*. [Our best success in wintering has been with the higher temperatures; but with them there must be increased ventilation, or the bees will become very uneasy, and fly out on the cellar bottom and die—at least that has been our own experience. Our temperatures ranged from 50 to 55, some of the time going as high as 65; but when we secured fresh air by means of an electric fan going into the room the bees did not appear to be uneasy.

One reason why 45 has been considered the orthodox temperature is because, years ago, when that dictum was put out, comparatively little attention was paid to ventilation. Prior to that time, sub-earth ventilators were recommended: and then it was concluded these were of no use because they carried in too much dampness and cold air. Then later the slogan was no ventilation except what percolated through the cellar walls, doors, and windows; and the advice was given to close these up as tightly as possible; and, strange enough, there was some fair wintering: but when the temperature hovered around 42 to 45, and a closed cellar, nothing was thought of two or three inches of dead bees on the cellar floor, and weak colonies in the spring. To-day we can not regard it as good wintering when the bees fly out in large numbers and die on the cellar bottom an inch or so deep; and the main cause of this is not bad food but bad ventilation.—ED.]

Grace Allen

THE DIXIE BEE

Nashville, Tenn.



Apparently we have all wintered satisfactorily here in Tennessee, tho at this writing the hives in our own yard have not yet been opened, as we prefer to wait till fruit-bloom. Last year the fruit-bloom came April 7, unusually late; today, March 13, it looks as tho another day or two would see both the earlier plum and peach trees in full bloom. Yet I am compelled to admit they have looked like this for nearly three weeks, the result of unusually warm weather in February followed by a cold blustery March.

What a season it has been, anyway! Here came Spring dropping purple violets in our neighbor's yard and golden daffodils in ours, filling us all with the delight of her coming and the hope of her staying; and then while she was coaxing the tight fisty little peach-buds to show their crumpled pink, quite suddenly out of the north old Winter came roistering back. He pelted us with a wonderful storm, with big north winds and hours of swirling snow. And poor little Spring, for all her singing as she came, had merely "walked right in and turned around and walked right out again!" Can you blame her, with snow on her daffodils? She had a deal of tidying-up to do when she finally did come back, for Winter, careless old fellow that he is, left many a mile of slush puddling up our roads, and many a brave-hearted blossom dead by our fences. But she has done it well, and now once more there are violets like bits of sky in our neighbor's yard, and daffodils like stars in a corner of our own.

It was during those early warm days in February that there were so many bees flying low around our yard, some of them alighting on the ground, especially on bare worn places fifty feet or more from the hives, seemingly drinking the moisture from the damp earth, while others were slipping into the little brooder-coops of the baby

chicks, apparently after bran. I put out water, which promptly became popular, and then, lacking a better kind, some plain graham flour, which also drew some attention. I watched them for a long time one warm Sunday afternoon, alighting on the shallow edge of the flour for a busy instant or two, then hovering just over it while brushing the flour back to the carrier legs, and finally going off loaded with big light-colored balls in their pollen-baskets.

FOR BEGINNERS.

When spring is quite surely here, and the weather pretty well settled, you will want to look thru all your colonies to see the conditions in each hive. You will make sure of stores. If they are in need, give them food, a comb or two of sealed honey if you have it—sugar syrup from a pan in the super, if you have not. You will notice now brood-rearing is coming on. If they are crowded, give them room by removing a comb or two of honey from the sides or raising it to the super. The queen must have plenty of room to lay, but do not spread what brood she has. You will make sure of the queens themselves. Of course, where you find eggs or young brood, you will know your colony has a queen, even tho you don't happen to see her.

However, when you get ready to clip your queens you must hunt for each one, thru frame after frame if necessary to find her—even tho your record shows you clipped last year. It may easily happen you will find an unclipped queen where you left a clipped one—the bees having superseded the other without either your advice or knowledge. As to the actual clipping itself, it may be done in several ways, but is always a matter of great delicacy and care. The method probably generally used is to pick up the queen by the wings, with the right hand; then with the thumb and first finger of the left hand take hold of her body—you will see by trying that it works out that the thumb goes under the

Bees in April

Drifting down the ages
On the wings of time,
April dawn comes rippling in
Like a little rhyme,
Rippling in and dancing
With her daffodils,
Dropping unexpected things
Over startled hills.

April with your treasures,
Have you ever guessed
Which of all your graceful gifts
My heart loves the best?
Not your lilting birdsong,
Not your swelling trees,
Not your brimming buttercups—
Bees, dear! Bees!

How you set them humming!
When their gauzy wings
Flash across my world, ah! then
My whole world sings.

thorax and the finger above, which is as it should be. The right hand is now free to do the clipping. Take off both wings from one side—not too close, however. The abdomen should not be touched at all; and the less handling the better, as sometimes the bees ball the queen when she is returned to them with the new strange taint. Be careful, too, to return her gently, avoiding dropping her, as she is easily injured.

The following extract from a letter received last year from Mr. O. J. Jones, of Urbana, Ohio, is interesting in this connection:

"Pick the queen up by the wings with the index finger and thumb of the right hand. Place her on the index finger of the left hand (end of finger); she will take hold with her feet. Place your thumb on the three feet next to it. Take the scissors in the right hand and clip one of the large wings. I always clip the right one. Place her back on the frame from which she was taken, not on the tops of the frames yet in the hive. (I have lost some valuable queens by following book directions and placing her on top of frames on account of her running in frightened; or the bees, detecting a foreign odor, ball their own queen.) By placing her on the frame yet out, if there is any excitement leave her out until she resumes her normal dignity. I have clipped hundreds of queens, and never taken a queen in my hands except by the feet and wings."

Aside from doing these necessary things, don't open the hives and fuss around with them very much. To be sure, that is an excellent way to observe, and to add to your familiarity and ease and experience, and most of us started in that over-zealous fashion, but it is rather hard on the bees.

* * *

We have known all along that this particular neighborhood of ours is not very good bee country, being too thickly built up. There are some stretches of commons, to be sure, but not very large, and constantly diminishing at that, and with too many cows taking advantage of the free pasturage. There are a few low outlying hills with some slight growth of locust; but to reach pasturage of any extent our bees would have to fly two and a half or three miles. Now, if Prof. Baldwin and the editor are going to limit their flight to a mile or even a mile and a half, we are even more restricted than we thought, and we can scarcely expect the bees to accomplish very marvelous things for us.

In this connection I remember that Mr. J. C. Parks, of Scottsboro, Alabama, said

in a letter this past summer that his experience shows the eight-frame shallow supers superior for a poor locality. His bees are located where there is neither clover, basswood, nor buckwheat—the main flow being from tupelo, poplar, locust, persimmon, and sourwood. It is not, he says, a good honey section. Well, last year he contracted a few colonies to eight frames, and these averaged 60 pounds of extracted honey better than the colonies in ten frames. Mr. Parks wisely declines to draw too positive a deduction from this experience, but is sufficiently impressed to make the experiment next year on a larger scale. All of his supers, by the way, are the shallow variety, but most of them ten frames. I know this past season we wished several times that we had shallow supers, for it was a poor year, and hence many of the large frames were only partly filled.

Another unfortunate thing about our particular neighborhood is that there are so many little apiaries scattered through it. You see this used to be a "half-in-the-country-half-in-the-town" section; and tho the town keeps elbowing the country further and further out, the simple countrylike ways are still in vogue. Nearly every family has its own little home, its own little garden, and a few hens. Then a goodly number keep a cow, some of them a pig or two, and still others a flock of geese or ducks. The ducks and geese and the pigs and cows have the run of the commons—likewise the streets! so it is not strange that bees are often added to other interests.

Of course the worst feature of so many such small yards is the carelessness and ignorance often shown in their handling, and the consequent danger of disease getting a hold. Noticing one row of hives while on a rambly walk one day last week we wandered into the yard to introduce ourselves and chat beetalk a bit. We learned that right there, within fifteen minutes' walk of our own home, they had had foul-brood troubles, but which kind or when, or what was done about it, we did not ask, being such utter strangers. But I shivered all the way home.

Then a few days later came GLEANINGS with Mr. Crane's encouraging article, "European Foul Brood not Formidable to the Efficient," page 985, Dec. 1, whereupon I gritted my teeth and made big plans for a thoroly efficient future; for if just plain efficiency or practical proficiency or any other ish-ency can strengthen our defense, there should be no deficiency, but adequate sufficiency, of genuine efficiency — that's simple common sense.

BEEKEEPING IN CALIFORNIA

P. C. Chadwick, Redlands, Cal.



The warm open spring will be beneficial in reducing paralysis to a minimum.

My bees are in fully 25 per cent better condition than at this time,

March 13, last year. Wherever an old queen has been carried over, the results are not so satisfactory.

The orange will bloom fully two weeks earlier than last season if the weather continues warm. The sage is little if any ahead of last season's growth. Should good weather continue it may cause a prolonged season, the sage following the orange rather than blooming at the same time.

Word has just reached me that Prof. A. J. Cook has been forced to resign as State Horticultural Commissioner on account of ill health. It is my sincere wish that he will not be incapacitated any length of time. His value to the beekeepers alone has been worth while, yet beekeeping has been only a side issue.

The *Western Honeybee* for March contains the announcement that a New York concern will loan money on California honey if stored in a warehouse and guaranteed by a state certificate. I have never had the least trouble in getting a loan on any honey I had stored in a warehouse where the warehouse receipt was presented at my local bank. In fact, the local banks are always ready to take honey for security on a loan. I should very much prefer to get my loan at home, even if I have to pay a little more for the use of it. If you treat your local banker properly you will be much more likely to get a loan in time of need when you have no honey to secure it.

Editor Bixby, in the *Western Honeybee* for March, page 53, says: "A. I. Root, in a recent number of *GLEANINGS*, inspired by notes of Editor Chadwick, waxes eloquent over sweet clover in the orange groves of southern California." Mr. Bixby, kindly read that matter over again, p. 130, Feb. 1. See if the questionable matter was not credited as a clipping from the Redlands *Daily Facts*. The words "orange groves of southern California" do not appear at all. While you are at it, observe the words "sweet clover" are taken from the clip-

ping, also that the word *honey* does not appear any place therein. The question of honey-producing was not the point at issue. The item appeared in Mr. Root's High-pressure Gardening department. The laugh is on you, Bro. Bixby.

Mr. P. G. Snyder, of Aibonito, P. R., wrote asking me if I knew of any bulletin on the value of bees as pollinating agents for citrus fruit. As I had no data on the subject I began a search on that line. But the very first round I was shocked by the following:

I am unable to give you the definite information on this subject that is very much needed. The following notes may be of some interest in this connection:

The navel orange, which is so commonly grown in California, is, as you know, practically sterile, and develops no pollen or seeds. I have never seen a perfect grain of pollen developed in a navel flower. Again, we know by careful experiments that the navel develops fruits when the flowers are bagged and no pollination is possible. Also, the pistil of the navel is very abnormal, the pollen-conducting tubes, thru which the pollen-tubes grow normally, being closed at the top, which does not allow the entrance of the pollen-tubes as in the case of the normal orange.

All of these facts would seem to indicate that pollination in the case of the navel, by either the honey-bee or any other insect, would be of no particular value. To determine this matter finally, however, would require experiments in which bees were used on navel trees in comparison with other trees which were protected, giving as nearly natural conditions as possible. Such experiments have not yet been carried out.

There is more evidence in favor of bees being necessary and desirable in connection with the other varieties of citrus fruits, but here again we have no definite experiments on which to base a conclusion. We do know that many varieties of citrus fruits have the power of developing without pollination. On the other hand, in the varieties where seeds are normally developed, we might expect that there would be less set without the pollination. In such a case bees might be an important factor.

H. J. Webber,
Director Citrus Experiment Station.
Riverside, Cal.

I cannot believe the foregoing letter is correct, however, as I am quite sure the bees gather pollen from the orange, for I have seen them in the act. I am not positive about the variety from which it was gathered, but I will make some investigation,

BEEKEEPING AMONG THE ROCKIES

Wesley Foster, Boulder, Colorado



In looking at that photo of G. Frank Pease's work-tent and auto truck I am wondering if the sweet-clover bloom furnishes Mr. Pease with much of his surplus. At any rate, he bought several hundred pounds of seed of me some time ago. It is the progressive beekeepers who look to improve their pasturage in every way possible.

THE ADVERTISING OF HONEY.

I think that many of our beekeepers are wrong in the assumption that nothing is being done to extend the use of honey. The fact is, a great deal is being done. Take conditions in the Southwest, in the West and middle West. Very few farm papers there are but carry from one to half a dozen honey advertisements. True, the classified columns are most largely used; but everybody reads the classified columns. I verily believe that thousands of dollars are spent annually by the beekeepers in this form of advertising. Of course, it is not general publicity, but it must get results or it would not be persisted in. This kind of advertising could be wonderfully improved by aid rendered the beekeepers in wording their advertisements, and something should be done at standardizing the goods offered. Honey is offered at from 5 to 12 cents a pound; and while much of it is very variable in quality and color it is no doubt true that honey of equal value is sold at a wide range of prices.

If the beekeepers would follow the methods used by some of the livestock associations and fruit-growers, better results could be secured. Suppose twelve beekeepers join together and each put up \$200 for a winter advertising campaign. There would be \$2400 to spend. The twelve beekeepers before the campaign began would all be prepared to put out, say, 10-lb., 30-lb., and 60-lb. cans of honey of the same quality and at the same prices. Then a two-inch advertisement with as much taste in the way of illustration as could be secured in this space with effective copy, and the names and addresses of all the beekeepers at the bottom; or instead of the names and addresses of all the members might be the name and address of the secretary to whom orders and inquiries could be sent. My idea of an advertisement of this kind would be one with the effective appeal to the people to use more honey, and also the prices at which it can be secured.

Each beekeeper would need to be pro-

vided with circulars, price lists, honey booklets, and a record system to keep track of inquiries and orders.

The amount of money mentioned would carry on a very nice winter campaign from October to March, and would cover the agricultural press of most districts of the United States. It would pay for two-inch space in from ten to fifteen weekly farm papers for five months. I have found that farm papers of 50,000 to 100,000 circulation are better mediums than those with 200,000 up, for the amount of money expended for space in each class of publication. Beekeepers who advertise will find what papers pay them best by a trial of a few months. It is rather expensive to gain the knowledge of the best mediums, but there is no royal road to marketing one's crop.

Floods in California and snow-slides in Colorado indicate what we may expect in 1916. Prospects are good, and bees are wintering well. I believe that the amount of honey carried over will not be large, and it would do the heart of beekeepers good to see the way honey is coming into its own in many localities. People are eating more honey—it is getting more publicity, and the lower prices have induced wholesalers to handle carloads where, in the past, little if any has been handled. In the future these districts will call for honey; and while the prices received this year have been ruinously low, it has made it possible for honey to be introduced into markets that before took little if any. Honey is being retailed at five cents a pound in some districts, and it seems to be a fair quality too—at any rate, it gives satisfaction.

WHAT BEEKEEPERS COULD DO.

Take, as an example, a county producing ten cars of extracted alfalfa or sage honey for export shipment. Suppose, instead of the owners of this honey taking \$15,000 for it, or 5 cents a pound, that they set aside (or, rather, borrow, which they will have to), \$5000 to put into an advertising campaign. The honey would bring, I believe, \$24,000, or eight cents a pound on the average. It would not be well to put the entire amount into newspaper advertising. Some could be used in trade papers (grocers), and in a house-to-house canvass. A few salesmen could be put on the road selling to grocers direct. With the advent of cheap runabouts, double the territory may be covered at no additional expense provided the roads are passable.

NOTES FROM CANADA

J. L. Byer, Markham, Ont.



Generally speaking, our climate averages pretty well one year with another. In other words, if we get a drouth, quite likely a wet spell will then follow; if we get milder weather than usual during early part of the winter, extreme cold may be looked for later on. Certainly the latter has been true here in Ontario this winter, when a very mild January was followed by a February three degrees colder than the average (official), while March to date (15th) has been very severe. The first five days were all below zero, and on the 10th five below. As we have had only thirteen days during the winter that have shown below zero temperature in our locality, it is easy to see that March has more than done its share in furnishing us cold weather.

On page 81, Jan. 15, A. I. R. asks, "How many years and even centuries has it taken the *bee* to learn the trade of making the beautiful honeycomb?" The answer is real easy, but I won't give what I think is the correct solution of the problem, as it would be too simple for modern scientists to consider a moment. Instead of answering the question, allow me to ask another one along the same line: While the bee was *learning* how to make the "beautiful honeycomb," where were all the *baby* bees being reared in the meantime?

Some time ago I stated that the common dandelion came as near to being an all-the-year bloomer as any plant we have in Ontario, as I had found blossoms in nine months of the year. On Jan. 25 I found a fully developed blossom in front of a hive, so now I shall have to say ten months instead of nine. But the common garden pansy is a close second for the honor of being our hardiest plant—indeed, it may even lead the dandelion. On the same day that I picked this dandelion blossom, different parties near us gathered pansy blossoms in their gardens. But bees do not work on pansies, and they do on dandelions. That is enough to make any beekeeper give the latter plant the preference.

Misery loves company, they say, and on that basis I am inclined to agree to a certain extent with friend Holtermann in his lament regarding European foul brood, p.

116. While I dread this disease I am losing no sleep over the matter, and I take comfort from the fact that men like War-rington Scott and others in Ontario who first had the disease among their bees, while they do not claim to have entirely gotten rid of the disease, yet have so mastered it that it in no way interferes with getting big crops of honey when there is any nectar in the neighborhood. I am hoping that, when we get the disease among our bees, as we are sure to do sooner or later, we shall be able in time to do likewise. That is the grain of comfort I chew *at* when I allow my mind to think of this "curse of bee-keeping."

This question of how far bees fly will never be solved to my satisfaction, as there are so many things to be taken into consideration, such as strains of bees, topography of country, etc. For years I was inclined to take a view similar to expressions on page 965, Dec. 1, and, in fact, I seriously doubted that bees very often go more than a mile and a half in search of nectar.

Our apiary north of Orillia is in a flat wooded country similar to that described by the editor, Dec. 1, and observations taken in 1913 prove how erroneous are the views that, under such conditions, bees fly but little over $\frac{3}{4}$ of a mile. That year a terrible drouth visited the section in question, and all the clover on high land was literally burned up. Nearly three miles southwest of the apiary of over 200 colonies was a strip along the river bank that was kept moist enough so that alsike clover was kept in bloom. The river had been dredged out, and this strip of clover was only a few rods wide and ran along the river for about two miles still further from the apiary. Our bees came to this strip of clover by the hundreds of thousands, and they were on the clover to the further end, so that many were nearly five miles away from the apiary. There was no question about the matter at all, as one could stand at the north end of the strip and see thousands of bees coming and going to the yard, and there are no other bees in that locality.

That same year there was some white clover west of the apiary across the bay. It is two miles direct to the bay, and more than half the distance is forest. Yet our bees, under these forced circumstances, flew the two miles to the bay, and then another two miles across the water. You will un-

derstand there was no pasture near the apiary, owing to the drouth having burned everything up. And yet right here in York County for years our bees would get nothing during August, when less than four miles away there was quite an acreage of buckwheat and bees near it were storing surplus. Clearly this matter of how far bees fly in search of nectar is a complicated one. [As we have stated, bees have been known to go seven miles, and a great many times two and three miles; but our contention is (see page 149), when flora is within a mile or a mile and a half, bees will not go further as a rule. It is only in peculiar cases that they go from two to three miles. Then, as Dr. Miller points out elsewhere, the matter of odor probably has some bearing. The aroma from clover or buckwheat fields probably can be carried by a breeze several miles; and if there is no clover or buckwheat in the immediate locality bees will keep on flying in the direction of odor mellifluous until they arrive at its source. The question then of how far bees fly for stores depends on the locality and conditions. See editorial.—ED.]

* * *

Bees have had no flight to amount to anything, altho bright sunshine is coaxing many to leave the hives, never to return. Present indications are that there will be quite a loss in many apiaries from dysentery. Colonies were unusually full of young bees last fall; and altho the latter part of winter has been cold, yet we have had colder seasons more than once. The cause would seem to be bad stores, probably caused by excessive moisture during late summer and fall. Another reason advanced to explain the cause of dysentery is that January was so mild that much brood-rearing was started, and then so much cold weather followed, with no chance for a flight, that naturally such conditions would follow. Personally I noticed young bees in the pupa stage being cast out of a number of hives early in February. That was *prima facie* evidence that brood-rearing was going on in January all right. Whether that is the correct diagnosis as to the cause of dysentery or not, I am not sure; but certainly for some reason we have more of the disease in our York Co. yards than we have had for a number of years. As to the north yard, as we have not been there since last October, and do not expect to visit the apiary for a few weeks yet, we know nothing as to its condition.

* * *

Any beekeeper knows that, when cold weather comes, the bees in the hive form

a cluster, the size of said cluster being determined by the severity of the weather. No doubt many a beginner has turned back a quilt of a colony known to be strong, and if the temperature was down below zero the smallness of the cluster would cause him to think that the colony had become very weak. On the other hand, if the weather moderated to the freezing-point or higher, a look in the hive again at that time would make things appear that the colony had just as suddenly become very strong again. This is orthodox, and up to the present season I think that possibly I would have said there are no exceptions to this rule. Early in the winter my attention was called to one particular colony in the home apiary when I noticed cappings, dead bees, etc., on the fresh snow in front of the entrance when all other colonies had no such evidence of activity. The colony was in a hive equal to 12 Langstroth frames in capacity, a single packed hive having an entrance five inches wide and one inch deep. Looking in this deep entrance I was surprised to see the bees quietly hanging below the frames, even tho the thermometer was but a few degrees above zero. This was unusual, to say the least; and when I next lifted off the cover of the hive and took a peep under all four corners of the quilt, and found bees in every corner, it is needless to say my surprise increased. Altho they were not at all uneasy I prophesied that there would be something doing before spring. To make a long story short, scores of times during the winter I examined that hive; and, no matter how cold the weather, the bees could be seen from the entrance, quietly hanging below the frames, and every corner of the hive would be packed full of bees, as would be revealed when packing was lifted up and the quilt carefully turned back. I am not sure whether this queen will prove to be a genuine "find" or whether the colony will yet go to pieces during the spring; but the fact is, they have been as described for over three months; and today, March 13, the colony is quiet, sweet, and clean when other colonies in the same yard are showing signs of dysentery. Probably about ten per cent are thus affected.

The queen in this colony is a dark Italian, and was purchased last July from one of our well-known breeders. Don't ask me any questions about her for a while yet. For a month or two, perhaps, I shall not want to mention the matter at all if the colony should yet prove to be a "four-flusher." However, you may be assured that this hive will get its share of my attention for the next few weeks anyway.

CONVERSATIONS WITH DOOLITTLE

At Borodino, New York.



THE BEST BEES.

"I am a comparatively new beginner with bees, but wish the best bees for comb honey I can possibly get. In time I may conclude to work for both comb and extracted honey. Are some bees better for extracted and others for comb?"

Volumes have been written on this subject, and the matter is not fully settled in the minds of many, even at the present time. Some claim that the black bees are preferable to any for comb honey, especially the large gray kind that they have in the South, while the smaller jet-black bee is nearly worthless. After trying in vain to get that large strain of black bees, all proving nothing better than the black bee of my first fifteen years of beekeeping, I have concluded that some one was mistaken. The black bee is superior in only one point for comb honey; and that point is, the *white capping* of the section honey which they produce. Comb honey sells mainly by the nice appearance of the sections; and the blacks, by leaving a greater air-space between the honey and by their heavier coating of wax, give the best possible appearance to section honey. And at all times of a bountiful flow of nectar, long drawn out, they are as good as any bees for honey; but with a slow intermittent flow of nectar the golden Italians are far ahead as to the amount gathered, while they cap their honey nearly as beautifully as do the blacks. However, some of our very best apiarists tell me they do not know which are the best.

If I were producing extracted honey altogether I would select the darker Italians, those produced from queens from an imported mother, or the most superior strain of leather-colored Italians which I could find bred by some breeder of known integrity. I would allow the young queens to mate with whatever drones there were in and about the apiary, paying no attention as to whether these drones were from Italian, hybrid, or black stock. Bees from such queens would use much less wax in capping combs than from any other strain which I know of; and as the capping of combs cuts no figure in the taste or looks of extracted honey, I should be so much ahead, as, for the most part of the time in the average surplus season, wax secretion is possible only by a larger consumption of honey.

If I were working for comb or section honey exclusively, then I would procure a

good queen of the golden variety, rearing all queens from her, and allow them to mate with any drones they might chance to meet, the most of which, without doubt, would be from an entirely different "blood" from themselves, which would give a direct cross. Such direct cross always gives greater vigor than anything I know of; and, as the question is asked, I should not care very much whether my yellow queens mated with drones from black or hybrid stock, as all of my experience goes to prove that thoroughbred golden Italian queens, mated to drones of either black or hybrid stock give bees equal to the very best for comb-honey purposes. If I could conveniently hinder it I should prefer not to have these queens meet drones from young queens reared from imported mothers—not because they would not give queens just as vigorous, and of just as good honey-gathering qualities, but for the reason that, as a rule, workers having much imported blood in them do not cap their honey nearly so nicely and captivating to the eye of the consumer as do those having more of the golden, hybrid, or German blood in them.

From the lot of young queens reared from this same golden mother I would select one or more queens which give the best results in section honey, considering amount produced, color, and smoothness of the cappings, disposition and wintering qualities, and use them to breed from for a year or two. Or I would get another golden queen from another experienced breeder in whom I had faith, and go over the ground again.

To sum up I would say, first have your young queens mate with drones as distantly related to your queens as possible. Second, use queens as closely related to imported Italian or leather-colored stock as possible, where working for extracted honey, for there are no better bees in the world, in my opinion, than those two or three generations from imported stock for securing all the honey there is to be had from your locality. Third, where white capping of combs becomes one of the great objects to work for, as is the case where working for section honey, choose the golden Italians, on account of their qualities in that direction. At the same time they are in no way second to Italians from imported stock, or the dark leather variety as to their honey-gathering qualities. Lastly, put your own self into this breeding business, using all the energy and vim you possess.

GENERAL CORRESPONDENCE

PERFECT POLLINATION OF CITRUS GROVES

BY PROF. E. G. BALDWIN

Your timely discussions of the proper number of colonies to fertilize a citrus grove, in various pages of GLEANINGS, have greatly interested me. While it does not seem to be *imperative* to know *how few colonies* will do the work, still it may be useful on occasion; for it will often happen, probably, that some groves will have a minimum quota of colonies in their vicinity. In such instances, if the number of colonies present were below the accepted and proved minimum, the owners of such groves could easily bring in sufficient to insure fullest fertilization. So it is wise to discover, if possible, what number will do effective work, where more can not be had. But I have always held, here, that "the more the better," and that seems to be the idea that is crystallizing in the minds of the growers hereabout, and even further south, about Bradenton, for example, and Tampa.

The blossom of the citrus (orange or grapefruit, for instance) is a so-called "perfect flower"—that is, has both pistils and stamens on the same stem, more or less united at their bases. The pistils rise a little higher from the base than the enveloping stamens, which stand outside of, and lower than the pistils. There are, hence, three ways in which the blossom can be fructified—gravity, wind, and insects. Gravity carries the dust from some stamen above the particular blossom in question down upon the pistils of the blossom below. Wind carries the dust from other blossoms on the same or nearby trees, over upon the pistils of blossoms within wafting distance. One citrus tree usually has many blossoms out at one time tho not with anything like the same evenness as the blossoms on apple-trees. The orange-blossoms come out much more irregularly and far less simultaneously. Nearby trees also add their contingent of fertile stamens to fertilize the pistils of any trees that are near enough; therefore, even were wind and gravity the only fertilizing media or agencies, there would be some fruit, often heavy crops of it, from these agencies alone. The fullness of the fertilizing would in all such instances depend on, first, the fullness and evenness of the bloom on the particular tree under consideration, the proximity of other trees, and their simultaneous blossoming period, etc.; second, on the weather during the time of bloom.

It is this latter point that we have studied most carefully. In our latitude (29th degree) the citrus-blooming time is at the end of February and thru March. In the latitude of Tampa, for example, it is the latter half of February and early March. Our conclusions are based largely for our personal deductions—that is, on data recorded by us in and about Deland. Here we have on an average, say, five weeks of blooming time. That means that from the time the earliest blossoms come out on the first and most advanced trees and varieties (tangerines are much later than others), to the end of the "last lingering rose" of the tangerine blossom, on latest groves (and land and location alter the time much), we have an average of about a five-weeks' bloom-period. That gives an outsider a very erroneous impression, I fear, about the length of bloom of a single blossom. I have watched this very carefully, and I think a blossom seldom hangs on more than three days, on an average. In hot dry weather one good day of sun seems to "cook" it, and it is done for the second day. For that particular blossom, then, the fertilization would have to be done within about two days, say, to be effective and best. Of course one day is sufficient provided the pollen from some stamen is wafted to the pistil in that time. But a season of damp foggy weather, when pollen wafts but little during the bloom of the particular blossom, would likely prevent full fructification of that blossom. A dead calm, too, in that time, would make gravity the only means of fertilization. For such blossoms as happened to come within the wet or calm weather only, would fullest fertilization be impossible. The succession of blossoms on other stems of the same tree would give opportunities for their fertilization outside of the periods of calm or dampness. But, taking our average springs here, one with another, we do not average more than half the time really favorable weather. Much is either damp, or a dead calm. And were gravity and winds the only agencies for fructification, we feel sure that many blossoms would not be fertilized at all. Of course, you may say that, usually, every tree sets enough fruit to insure a sufficient crop. But would it do so with these two agencies alone? I must confess that I am not in position to state dogmati-

early or with finality on this point. I am planning now to make a test of the question by covering certain branches during their time of bloom, and test by actual observation the effect on a large number of blossoms, kept from all visits of insects.

That brings us to a discussion of the observed data from the increase of bees among our groves. Six years ago one could hardly find a dozen men to the county in Florida who kept bees, and most of those were small holders. Now the number has grown by leaps and bounds. Then, too, many fruit-growers had an antipathy to bees, thinking they damaged their bloom. But enlightenment is coming. Now, those same growers who objected to bees in their groves are asking beemen to place apiaries in their holdings. Here, for instance, one of the largest growers of this section, Judge Stewart, has made a request to have bees placed in his large groves north of town, seeing what has been done in the increase and quality of fruit in and about town, where so many bees are flying. Half the grove men here have bees in their groves, either their own (largely so), or sometimes from neighboring beemen. Mr. C. F. Spaulding, of Deland, was the first, ten or twelve years ago, to see the importance of bees among his trees, and located a small apiary in his grove at his own expense, not for honey, but for fertilization. No one has had better fruit nor more even-bearing nor fuller carrying from setting to maturity than he has had for a decade past. His grove is pointed out as one of the most even-bearing. That was even ten years ago. Now, with hundreds of colonies to ten then, he has not found it necessary, as I have taken over his apiary. But I have 100 colonies within a block of his grove. There are probably over 400 colonies within flying distance of any one grove in and about town. If, as seems to be the growing idea, bees do not fly more than a mile and a half, on an average, then we need more bees rather than fewer. That is my contention. From a pomologist's point of view, not that of the apiarist, we seem to be coming to this view. "The more the merrier." Too many bees there cannot be; all will admit that. Too few there can easily be, all are coming to admit. Just how many make the minimum is the problem. I wager it is impossible to do more than determine this point roughly from our present data, at least.

One point I should like to add: I can easily see why Editor Root should insist that fewer bees per acre are needed to fertilize orange-trees than fruit-trees north,

for two reasons—namely, first, the shorter time of blooming in the fruit-trees; second, the comparatively weak condition of colonies in the North at the time of fruit bloom. Perhaps a third element might be added, the fact of bad weather at the time of fruit-tree bloom. My statements in our local papers were all directed toward encouraging an understanding of the matter, and a favorable attitude among our growers toward bees in their groves. So I stated a large number as the necessary one. I wrote the following for the local paper two years ago, since which time a marked change in attitude among growers here has been noted. I may be allowed to repeat that closing paragraph:

"For best results there should not be fewer than five hives to an acre; even more are better; for in stormy weather, when bees fly for only a short time during the day, or for only a short distance from their hives, a larger number of colonies will insure perfect fertilization, where a smaller number might not."

So, in absence of accurate data as to the minimum of safety in numbers, I have pleaded for the maximum. The idea also is growing among beemen further south in the state, I note in some instances. I refer notably to the Manatee Fruit Co., of Palmetto, and to the groves of Mr. Z. Goddard, of Terra Ceia, Fla.

The final point I wish to make is this: That growers are at last coming to admit the Darwinian theory as true in their fruit, that the fertilization of blossoms from trees remote gives stronger buds, and young fruit, and makes better mature fruit, which in turn improves the strength of the seed, and makes for constant improvement in vitality all thru the entire life of the tree, and thru succeeding generations of stock. The growers in and about Deland and Bradenton and Tampa and Arcadia and Orlando, hold this idea, "The nearer the bees to their groves the more fruit they have, and the better the quality."

Editor Root says, that on his visit to Florida he found the growers unaware of any bees in their groves, often, and yet they secured large crops of fruit. He adds that he found bees flying there, and always told them that they probably knew little of the real number of bee-visitors they really had among their trees. His remarks were most pertinent, and showed the accuracy of his observation; and it might be well to remark that there are a dozen—yes, twenty—bee-trees in the average flying distance of any grove in Florida, compared with one such bee-tree within flying distance of the usual

orchard in the North. That would make a difference; for it would insure fertilization, even in bad weather, in cases where the grower thought there were no bees about. Few men, till their attention is called to it, notice whether bees are on the blossoms or not.

I was glad to read the article, p. 92, Feb. 1, taken from the *Hemet News*, of California. It seems to corroborate what I have been forced to conclude from my own observations along this line.

Deland, Fla.

[Prof. Baldwin states the peculiar conditions in Florida so clearly that we consider if his estimate of the number of colonies needed per acre were too high ours was too low. As he says, it is far better to err on the safe side—that of having too many, rather than too few to do the work of pollination, both in the orchards of the North and of the South. The last paragraph in the article referring to the item on page 92 is somewhat at variance with the following article. Who is right?—Ed.]

FROM THE CALIFORNIA STANDPOINT

BY M. C. RICHTER

As for California, it can be stated positively that all of our commercial varieties of citrus fruits are able to set and mature fruit without pollination. The navel orange has no pollen, and very rarely contains a seed. If, perchance, a seed has formed in the navel orange, it means, in all probability, that a bee has brought some pollen, *e. g.*, from a Valencia tree, to the stigma of the navel orange. It has happened at times that navel oranges in some orchards have had a considerable sprinkling of seeds in them. This phenomenon, however, is of rare occurrence.

On the other hand, about half of the Valencia oranges contain seeds; but it rarely happens that there is more than one seed in an orange. The seeds are, of course, the result of pollination. But if all the bloom of a Valencia orange-tree were protected from insects, there would nevertheless not be the slightest diminution of set and mature fruit.

The same is true of lemon-trees. Dr. J. Eliot Coit, Professor of Citriculture of the University of California, and the leading authority on the Pacific Coast, performed the following experiment on a lemon-tree. Just before the buds opened he cut off all the upper portion, *i. e.*, the petals and the stigma of the pistil that receives pollen. The bloom, nevertheless, set and matured good fruit, which did not contain a single seed. This experiment, altho made for another purpose, *viz.*, to ascertain whether the lemon-tree could produce seeds parthenogenetically, also proved that pollination is not necessary to set and mature fruit.

The honeybee in the citrus orchards of California is not an unwelcome guest, however. She does not harm the orange-grower, but she does enrich the state by thousands of dollars annually.

San Francisco, Cal.

[The conditions in California, especially when seedless fruit is grown, possibly are quite different from conditions in Florida and in the Isle of Pines. A Florida orange and a Florida grapefruit are quite different from the same fruit in California. If we are correct, Florida oranges all have seeds, as the seedless variety apparently doesn't do well there. There are a great many seed oranges and grapefruit grown in California; but the grapefruit in California is very much smaller than that from the Peninsular state. Many colonies of bees are in the vicinity of the orange and grapefruit groves in California. They gather a large amount of honey from the groves. The presence of the nectar would seem to indicate that Nature has an object in seeking out the visitation of insects in the citrus groves. While it is probably true that seedless fruit can be grown without bees, it is possible that larger grapefruit could be grown in California providing there were more bees to the acre.

At the present time the citrus-fruit growers of the Isle of Pines are discovering that they need bees; and we happen to know that certain concerns furnishing bees are having calls for bees. Bees in Cuba are so badly affected with disease that the residents of the Isle of Pines do not care to import from their nearest neighbor and are, therefore, seeking the breeders in the United States.

From the best advices at hand, the Isle of Pines is greatly in need of bees because the fruit-growers there are waking up to the fact that they probably could grow more and better fruit if they had more bees.

This is a rather interesting question, and we hope that some time the Bureau of Entomology, Washington, can give us scientific data on it.—Ed.]

JUST HOW IMPORTANT IS THE WORK OF THE BEE?

BY J. E. CRANE

We have all doubtless seen apple-trees that blossomed profusely, and that apparently set full; but when the young apples were as large as beans, they began to drop, and kept on until not enough apples were left for half a crop. Now, what proportion of this dropping is caused by lack of the proper fertilization of the flowers? I believe a much larger share than we think. It seems evident that there is a wide variation in the ability of fruit-trees to become fertile. Some may produce from the pollen of the same flower, while others may set fruit with pollen from other flowers from the same tree, while still others may require pollen from some other tree.

Plants have many ingenious ways of scattering their seeds over the earth. The dandelion, with its winged seeds, the burdock with its burrs that stick to everything that comes in contact with them. The "tumbleweed," by breaking off at the surface of the ground at the approach of cold weather, and rolling over before the wind, which scatters its seeds everywhere in its path. Fruit-trees cover their seeds with a pulp enjoyed by man and other animal life, and just as the fruit ripens gives the skin a bright color to attract attention, the object of which is doubtless that the fruit may be plucked and the seed scattered. Fruit-trees seem to know by instinct what the pulp of the fruit is for, and just the object of surrounding the seed with it, and when the embryo seed does not develop in the ovary they seem to know the utter uselessness of developing the pulp, and absorb the

cells that connect the stem of the fruit to the twig of the tree, and let it drop to the earth. If the tree could speak I think it would say, "It is useless to produce fruit unless it contains seed." How wonderful it all is! We are accustomed to think that the young fruit drops because of the dryness of the earth, or very hot weather, or because the tree had set more than it could carry to maturity, and doubtless these may have a part in causing the young fruit to drop; but there is reason to believe the imperfect fertilization, or complete lack of fertilization, is more often the cause of the dropping of young fruits.

But there are some surprising exceptions to the rule. There is the seedless banana. The navel orange, some varieties of grapes, and even some apples and pears, will mature without seed. Here is a large field for experiment by boys or girls. Let them take two branches on the same side of the tree, of nearly equal size; count the blossoms on each. If not the same, make them so by removing some from the branch having the most; then cover one with mosquito netting, leaving the other without cover. Remove the netting after the petals drop. When the fruit ripens, carefully count the number of fruits on each branch. Observe if other insects than bees are at work on the flowers—what kinds, and the proportion of them to the bees. Also we should like to know the variety of apple or pear experimented with. Peaches, plums, cherries, and even currants and gooseberries might come in for a share of our attention.

Middlebury, Vt.

CAN EUROPEAN FOUL BROOD BE STAMPED OUT?

Encouragement for Mr. Holtermann

BY GEORGE H. REA.

I don't wonder that Mr. Holtermann can not derive much comfort out of his Jobishite friend's advice regarding European foul brood. While it is Mr. Holtermann's bees that are "boiling" instead of himself, yet there is some analogy between the cases after all. If Eliphaz and Bildad and Zophar were not much comfort to Job, they did one good thing—they stirred up his fighting blood.

To control a disease and exterminate it are two different things. Like Mr. Holtermann, I am not satisfied with merely controlling the disease. I am satisfied with no-

thing less than its extermination, so that it will not be eternally cropping out in my apiaries and keeping me in hot water lest it break out seriously at any time. I can not afford to spend half of my time looking for it.

Mr. Holtermann is hunting for "the one who has stamped out the disease after it has spread among his bees." I will essay to offer my services in that capacity. If any one has doubt up his sleeve, pay me a visit and look up my records. Besides cleaning up the disease from my own bees I have helped to rid it from this community. It has been prac-

tically stamped out of several other badly infected areas also. I am now serving the state in the capacity of apiary inspector.

Any one conversant with the bee literature of today knows that more confusion is resulting every day from the many so-called treatments for the cure of European foul brood, and all the time the disease marches triumphantly on. It has swept over whole counties and states, and bids fair (as I understand) to sweep over the whole of Canada. Some of the best beekeeping counties of Pennsylvania are practically depleted of bees by its ravages, and the end is not yet. This is true of other states also. Shall we ever be able, then, to conquer and bring under control this scourge among bees, or shall we throw up our hands and give up beekeeping as a bad job? I say, give up—never! It can be stamped out of an apiary or community.

As to eradicating this disease from the country, that is a question of right legislation backed up by adequate funds and the employment of experts who will use radical methods of treating it. Up to date I know of no state that possesses that happy combination. But I have faith enough in the bee business to believe that the time will come, at no distant day, when it will be recognized and cared for adequately.

I do not wish to add anything to the confusion and losses resulting from the improper treatment of European foul brood; but I do wish to pierce Mr. Holtermann's cloud of gloom with a ray of hope and comfort. Before I knew how to handle this disease, and while experimenting with many so-called cures, I lost hundreds of dollars' worth of bees. Others have done the same thing. I know it is a serious pestilence; but, on the other hand, I know positively that it can be stamped out. To do this involves the fundamental principle used in fighting many diseases with which we are familiar—i. e., sanitation. Sanitary measures used in combating epidemics of typhoid, cholera, smallpox, etc. need no discussion. The simple expedient of removing the bees away from all infected material into a clean hive where they can build up anew, if properly done, will positively cure European foul brood with no danger of its recurrence unless the bees rob it somewhere or have it carried to them.

I want to go on record, without fear of successful contradiction, that the beekeeper who treats his bees infected with European foul brood exactly as he would for American foul brood (two shakes) will eradicate the disease from his apiaries. Those who advocate many of the so-called short cuts

(most of them long cuts) have not been able to prove to the satisfaction of the bee-keeping world that they can eradicate the disease. The very fact that they are continually looking for it and expecting it to break out again shows that something is wrong, either with the men or the methods. Why don't they get rid of it?

I might give my long list of experiments and failures as well as the ruined apiaries I have found as a result of unsuccessful treatment, but it would take too long. We have had it in this locality as badly as anywhere, but it is here no longer.

We must all admit that some experts in some localities and under some conditions may do some things that we common mortals can't do. Now, if they can cure European foul brood by dequeening and requeening, etc., that is the thing for them to do. I must admit that I can't do it without a feeling that it is pretty sure to recur some time in the future. From what I have seen in my visits in hundreds of infected apiaries, I know that the rank and file of beekeepers can't do it either. I could show that the shaking treatment is the most economical, anyway. Dequeening and requeening, Italian bees, etc., are of no avail so far as a sure cure is concerned. They are helps, and should be used in connection with a cure, but helps only. In order to *keep* your bees clean it is necessary, of course, to have the surrounding territory clean so that your bees will have no place from which to carry it by robbing.

MY METHOD IN BRIEF.

Any colony showing the disease is shaken at once. If the infection is general in the apiary, which is probable in an outbreak of European foul brood, all colonies are shaken in order to run no risk on those that do not show it. Good combs of honey are extracted, and the combs, with all other empty combs, are melted up. Combs containing diseased brood, if bad, are burned. Enough bees are left on the brood to care for it, and this brood is then stacked up two, three, or four stories high, in an isolated corner of the yard to be shaken in 21 days. The entrances to these stacks of brood must be small so that the bees can protect them. The cover and the whole thing, in fact, must be bee-tight excepting the small entrance. There is no danger of robbing if well done. Strong colonies will result from this brood when shaken. The combs are then to be melted up.

The first shake is on starters attached to strips of lath. Three or four are all that is necessary. The second shake at the end of three days is on full sheets of foundation.

Any colonies, at the first shake, not strong enough to make good colonies, are shaken together.

If a honey-flow is on, the bees may be supered as in the regular method of forced swarming practiced by some, and a crop of honey harvested. If no honey is coming in they must be fed.

The wax from the melted combs will pay for the new foundation and the work. The bees are now absolutely clean, and on new combs, and practically nothing is lost but the time necessary for the work, and that is really paid for. Do not lose sight of the fact that other bees in that locality must be looked after too.

By the shaking treatment the bees lose practically no time. In fact, they will work with the vim of new swarms. All colonies headed by old or failing queens, or those not pure Italian, are replaced with young Italian queens. Methods of treating that involve a period of queenlessness make a serious break in the life of the colony. The bees will practically loaf thru that queenless period. A colony left queenless or without a laying queen for two or three weeks will be of no particular value for the rest of that season. I trust that no one will misunderstand me. I recognize the many good and valuable things in other methods of treating; but fifteen years' experience with this disease has taught me

that radical treatment is not only the safest but the most economical in the end, and the only sure way to stamp it out.

There is much talk just now about strains of Italian bees that are immune. It would not surprise me if some would-be queen-breeders(?) would start advertising such bees. Will the gullible public bite? There is much evidence that Italian bees are resistant to the disease because of their vigor, and should be introduced generally as a help in the fight. But *immune*—not yet. I venture to say from the very nature of things they never will be, but that is another subject. We all know how Italian bees will clean out the bee-moth and keep them out. That is because they are a hardy and vigorous race of bees, and not easily discouraged. They will work at European foul brood the same way, and tend to keep it down; but while they are doing so in many cases they are losing out at the same time. The beekeeper who thinks that he will never have European foul brood just because he has a good strain of Italian bees may wake up with a sudden jar some fine morning.

I know what it means to handle more than one thousand colonies of bees with little competent help, and to treat hundreds of cases of foul brood, and I offer my experience for what it may be worth to others.

Reynoldsville, Pa.

TO THE RESCUE OF MR. HOLTERMANN

BY LAURENCE A. P. STONE

Poor Mr. Holtermann! I wish I could sympathize with his sad remarks on page 116, Feb. 1; but, unfortunately, my feelings concerning the menace of European foul brood among the bees do not disturb me, altho I have had to contend with this disease among my bees ever since I have been in the bee business. It has been more of a blessing than a woe, for it has improved conditions among the beekeepers of my locality, and made it possible to get decent prices for honey.

Situated as I am, in Canada, just across the river from Buffalo, I have had the full benefit of European foul brood ever since it crossed Niagara River. Before the disease arrived, almost every farmer in the vicinity had one or two hives of vicious black bees; and when any surplus honey was made they sold it for a song. It was impossible for any bee specialist to compete with these people, as the latter would invariably undersell. Since these farmers never gave any time to their bees, what honey they

received was in the form of a bonanza, and what they could no; eat themselves was promptly sold at the first price offered, or, rather, just a little below the one they heard the regular beekeepers were offering. No care was ever taken of the bees; the hives were made of any kind of material, and I doubt if one person in ten of these had ever seen the inside of a hive.

Then came the disease; and the way it wiped out these beekeepers was a caution. Before long a hive of live bees was almost a curiosity in the neighborhood. Luckily for me I had started right, and had mostly Italians. The disease used to touch my yards now and then; but with one exception it never took a firm hold in any colony of pure stock. Only the hybrids suffered, and I requeened these as fast as I could with good stock imported from the United States, and in but one case was there trouble with the queens purchased. These queens came from a very prominent breeder, and I was pained with the results obtained from their

bees. They gathered but little honey, and were very poor resisters of European foul brood, while experiments with them cost me a number of colonies before I awoke to the fact that they were not what I wanted.

Keep up your spirits, Mr. Holtermann! You'll find European foul brood much less serious than you think, if you have Italianized, and I feel sure that you have. I do not agree with Mr. Selwyn when he says that the Italians must first suffer from it too. Mine did not, and that is reason enough for me to disagree. It does not take much trouble to find the disease in a yard, and requires very little more inspection than should ordinarily be given a normal apiary. In the first place, if bees get thru the spring months and to the clover flow without contracting the scourge, it is almost a sure thing that there will not be any until a scarcity of honey again; so, outside of treating the colonies that contracted it before this time, one need not be looking for new cases but devote his time to the honey harvest. One need not be so expert as Arthur C. Miller in understanding the conditions inside of a hive from outside appearances, to know foul brood is present. It is easily noticeable without tearing the hive to pieces to find it.

I have tried many methods of treating European foul brood, and I don't blame Mr. Holtermann for feeling the world on his shoulders if he is considering many that are recommended. To follow the instructions of many bee-doctors, one would have to destroy all combs and hives in the infected area, and do nothing but treat sick bees. I don't destroy any hives, and but very few combs; yet I manage to clean up the disease and get a good crop of honey. My treatment follows Dr. Miller's, except that I kill the queen from the diseased colony and introduce fine Italian stock, so as to have a new queen laying at the expiration of the ten-day period. I never attempt this plan during the spring or fall, but only during a good honey-flow, as the bees very rarely clean up the disease unless plenty of nectar is coming in. I attribute this to the fact that bees always seem, during a flow, to feed the fresh honey to the larvæ; and as this honey, as a rule, is free from the germs, there is very little reinfection in the colony. In the fall or early spring, more radical treatment is necessary. If the combs in a hive have more than one-eighth of the unsealed brood diseased at a time more than two weeks in advance of the clover flow, I shake the bees off on to full sheets of foundation, giving them one comb of *sealed* brood from a good Italian colony; and after a week I kill the old queen and intro-

duce Italians. If the colonies to be treated are fairly strong, and there are more than one of them, instead of destroying the brood I stack it up two stories high, leaving enough bees adhering, after the shaking, to hatch out the sealed brood. At the end of ten days I open up these stacked queenless colonies, cut out all queen-cells that have been built, and introduce good Italian queens. The infected combs should be melted up and the hive burned out with gasoline.

In the fall I simply destroy the colonies as stated, for it has never paid me to keep a diseased colony over until spring.

However, the neatest way to use Dr. Miller's method, and still get a crop of honey from the bees (unless the disease has gone too far), is to commence treatment at the beginning of the clover harvest. Make the infected colonies queenless, and unite as many together as will make up one strong colony and then introduce choice queens after the ten-day period, *but first make sure of destroying all queen-cells started by the colonies*. Instead of laying queens I prefer introducing choice cells, because I have plenty of choice drones flying, and cells are much more easily accepted by hives that have been queenless for ten days than frisky young queens. Dr. Miller's plan works all right with me, and I think it will with others, provided they use it as I do.

Mr. Holtermann, in my opinion, will not find European foul brood such a calamity after he has dealt with it a year or so, especially if he uses the afore-mentioned treatment. Henceforth, because of a little more watchfulness he will get bigger crops of honey and have finer bees. Where there are now ten beekeepers to compete against in his vicinity, there will soon be but one. Nothing but the right kind of beekeeper will be left in the business, and better prices will be obtained for honey. In short, fight the plague now and reap the harvest later, for virtue, in this case, will surely give a reward.

The time is not far off when, because of European foul brood, there will be no finer bees nor better class of beekeepers in the country than in my own county of Welland. However, I see no reason why all other counties, including Mr. Holtermann's, because of these diseases, cannot correspondingly improve. The wintering problem right now is far more troublesome to me than any bee disease; and our good friend, since he has mastered the former so well, certainly will not have much trouble with the latter. Therefore, Mr. Holtermann, be not pessimistic. Better times are surely in store for you if you care to work for them.

HAND'S CONVERTIBLE HIVE—A WINTER CASE WITH LITTLE EXTRA EQUIPMENT

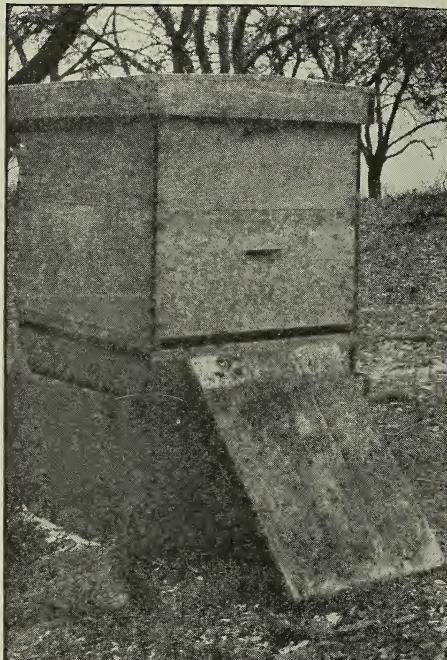
BY J. E. HAND

Economical methods of winter protection of bees outdoors is a hobby of mine. My colonies are all in 14-frame hives with supers to match, but we have no difficulty in contracting a 14-frame colony into an 8-frame wintering-chamber, and all our colonies are wintered that way, partly to economize equipment, but more particularly because I regard extreme contraction fully as important as external insulation.

After an experience of forty years in outdoor wintering in the North I have come to regard external packing as inadequate unless coupled with extreme contraction of the wintering-chamber. In northern Ohio it is better to provide a moderate amount of packing with extreme contraction than to resort to excessive packing without adequate contraction of the wintering-chamber. An ordinary colony is poorly protected in a non-contracted hive in spite of packing—like a small heater in a large room. A two-story hive in a winter case will do no harm if the honey is all in the top story, neither will it do any good. Every wintering hive should have a three-inch space below the frames, and, of course, a packed bottom-board would be superfluous.

Undoubtedly the quadruple case will winter bees well in most locations, but it is not perfect. 1. It is expensive. 2. It is idle capital six months of the year. 3. It requires too much lifting of heavy hives (to eliminate the nuisance of handling heavy hives I adopted a hive so heavy that one man can't lift it, and I've been happy ever since—no more hive toting for me). 4. The basic principle is wrong, for a thick-walled inner chamber non-contracted invites condensation and humidity, and a thin-walled outer case invites radiation.

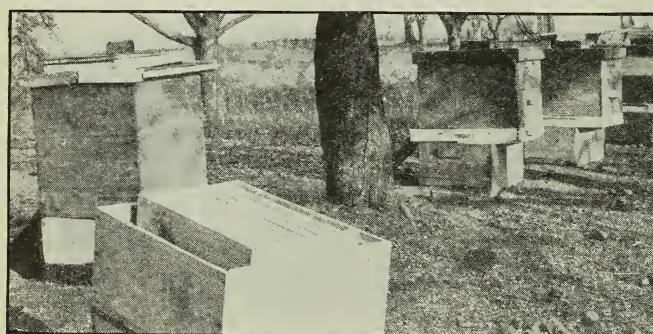
It is more economical and practical to make hives protect bees than to make winter cases to protect hives. By a system of hori-



J. E. Hand's 14-frame hive.

zontal expansion in summer to the capacity of 14 frames, and contraction in winter to eight frames, the hives proper are converted into winter cases with no extra equipment save a thin-walled inner chamber costing barely 25 cts., useful in summer for nuclei, increase, etc., therefore not idle equipment.

Fig. 1 shows a 14-frame convertible hive as used in the summer with frames hanging parallel with the entrance. The external appearance is the same in winter except the entrance, which is contracted to $\frac{3}{8}$ by 6 inches. Fig. 2 shows the inner chamber in position inside of a regular hive-body, with frames hanging at right angles to the



The hive containing the inner wall for the contracted colony in winter.

entrance, thus providing adequate spaces for packing. The extra depth of the inner chamber (12 inches) provides a deep space under the combs, and a full-depth upper story holds sufficient packing on top.

These hives cost but little more than good winter cases, and we have the satisfaction of knowing that every hive is a winter case, and *vice versa*. To prepare for winter, place eight combs, having the most honey, in the wintering-chamber, which is then placed on the floor inside of a regular hive-body put on the top story, and feed until every comb is solid full of honey and syrup; then apply the packing in the regular way, and let them alone until they become crowded for room in spring. Eight combs will hold approximately 40 lbs. of honey, which we regard as the minimum limit for best results in northern Ohio, where the weather is so uncertain in spring that it is unsafe

to depend upon nectar secretion for a food supply much before June; therefore we find it more economical and practical to provide sufficient stores to last until June than to fuss with feeding in April and May, and our spring work is thereby greatly facilitated. By this method every brood-comb is handled separately and inspected carefully in spring and in autumn. It means work, but not heavy lifting, and we know the exact condition of every colony.

The convertible hive is 20x24x9½ inches outside. Supers and brood-chambers are alike and interchangeable. If more packing is wanted at the ends it can be made longer; but for our location 24 inches is sufficient with our system of extreme contraction. The inner chamber is 13 x 19, 12 inches deep, made of half-inch sides, and ¾-inch ends. I have no hives for sale.

Birmingham, Ohio.

DELEGATES' SESSION OF THE NATIONAL BEEKEEPERS' ASSOCIATION

BY F. ERIC MILLEN, SEC.

At the forty-sixth annual meeting of the National Beekeepers' Association, held at the Sherman Hotel, Chicago, Ill., on February 22, 23, 24, the delegates present made an effort to place the National on a more stable foundation.

For some reason the National has not made much headway during the past few years, and it seems to have receded somewhat from the prominent position it formerly held. The past is gone, and it would serve no good purpose to dig up differences which we hope are safely buried. All of the officers did their best; but with a lack of unity progress was impossible.

There is room and need for a national association of beekeepers, and an immense amount of good work can be done by the National body for the good of beekeepers individually and collectively. Dr. C. C. Miller, America's grand old man in beekeeping, fittingly expressed the sentiments of those present when he said that it would be a pity to see the National break up. The doctor recalled many profitable conventions in days gone by, and these meetings had been the source of much pleasure in the meeting of brother beekeepers, and the exchange of greetings one with another. I am sure the doctor's remarks made every one of us feel that the National must live; and now that the doctor has diagnosed, let us make the prognosis favorable.

The sentiment was strongly expressed that the new officers should avoid commer-

cialism in the form of selling supplies, etc., and that they should confine themselves to helping the beekeepers along other lines, educational, fraternal, etc., which they thought were just as profitable, and more needed by the beekeeper.

With the exception of Mr. E. J. Baxter, Nauvoo, Ill., a new set of officers was elected as follows:

President, Professor Francis Jager, University Farm, St. Paul, Minn.

Vice-president, Dr. W. M. Copenhaver, Helena, Mont.

Secretary-treasurer, F. Eric Millen, East Lansing, Michigan.

These three officers, together with Mr. E. J. Baxter and Mr. E. S. Miller, Valparaiso, Ind., are to act as directors.

Mr. E. D. Townsend, editor and owner of the *Beekeepers' Review*, resigned as director, so that the new officers would feel free to inaugurate new policies without being tied in any way. Those who are personally acquainted with Mr. Townsend know that he has the interests of the beekeepers at heart, and that he would sooner remove himself than oppose any measure that seemed to be for the good of the cause.

While the *Review* is still the official organ of the National, it is now owned by Mr. Townsend, who dictates its policies.

The National Beekeepers' Association will work under the articles of the constitution as printed in the December number of the *Review* for 1915.

Membership dues to the association are \$1.50, which includes the *Review*. We cordially invite all beekeepers to join the National Beekeepers' Association. Members are eligible, whether their state association is affiliated or not. We hope the beekeep-

ers will show their confidence in the officers elected, and aid us in building a national that will be a source of pride and a credit to one of the greatest beekeeping countries in the world, America.

East Lansing, Mich.

SOURCES OF HONEY IN THE OZARK MOUNTAINS

BY OTIS A. GRIFFITH

Beekeepers here in the mountains are looking forward to 1916, as the prospects are excellent for the main honey-producing plants, white clover and sweet clover.

We are looking forward to the time when white sweet clover will take the place of all other hay crops. Besides being the best for honey, it is a soil-builder, and also the best for hay and silage. On many old wornout

It furnishes early pollen for the bees. Red cedar and red elms of the bottoms come next. By March 30 we have glade moss, buckeye, sarvis bush, maples, pawpaw, dogwood, and redbud. These furnish some honey. By this time there is a wealth of bloom of all kinds. The south slope furnishes an abundance of wild buckwheat, which begins blooming in May. After this



Cutting the first crop of buckwheat on the "Heights," a part of the Ozark Mountains, near Verona, Mo.

clay fields it is grown successfully. I have scattered many pounds of seed along the roadside. Five years ago I offered to give sweet-clover seed away, but today I have no trouble in getting rid of it at the market price.

Altho this locality here is nearly level it is in reality the highest point in the Ozark Mountains. The valley and the hills are covered with a natural growth of all kinds of timber, and there are many wild flowers blossoming thruout the season, which furnish either honey or pollen. The mountain elm blooms first of all, about February 20.

comes the white doe, a natural honey-plant. It is snow-white, grows about two feet tall, and has a white flower in a compact form. When a bee alights on one of these flowers it apparently does not leave until it is ready to start back to the hive with a load. The flowers last about thirty days, and the honey is water-white.

We have also what is called the fox-grape and the bluevine. While the blooming period of these vines is short, the yield of honey is good. The fox-grape grows along the streams and on every bluff. In some places it is impossible to walk because of

the tangle of these vines, all a mass of bloom, and the perfume of the flowers can be smelled for many yards.

I have never failed in getting two crops of Japanese buckwheat from the same land each year. I get from ten to fifteen bushels per acre at each crop. I had the third crop in full bloom when our first hard freeze

came last fall. If the first crop fails to mature, or if it blasts, as it often does, I plow it under and smooth the land down. I always plow under more than enough seed to reseed the second crop. Buckwheat plowed under makes a fine fertilizer, and gets the land in fine condition for a meadow.

Verona, Mo.

DO BEES PREVENT DAMAGE TO FRUIT-TREES BY FROST?

BY G. W. ADAMS

There has come to my knowledge a matter concerning the fertilization of fruit by bees which I have never seen touched upon, but which, if true, is of great importance.

Here is the claim, and it is made with a good deal of confidence after several seasons of careful observation, and on a rather large scale. *Bees will, to a very considerable extent, prevent damage by spring frosts.* The experiment has been mostly with peach, but applies to all blossoms.

The large orchard I have in mind was greatly damaged about one year in three, and to some extent every year. An apiary was established, and in a three-year test there has been no appreciable loss, altho the frosts have been (as proven by a local weather-bureau station) fully as late and severe.

Two reasons for this appear at once.

1. Every day, before the chill of evening arrives, the ripe blossom is fertilized, and the life processes transferred from the extremely delicate and exposed parts of the blossom to the protected ovary which is sheltered and closely covered in the base.

2. From the observation and study of vegetable temperature, we get evidence that there is a slight development of heat accompanying these vital processes. A careful and technical study of this will show its importance more fully.

I think no fruit-grower who has observed with care will dispute that most fruit damage by cold is to the open blossom, the freezing of the bud being the less common; and if the bees will protect us from this as well as by their prompt action, lessening the loss by heavy rains, we should realize and appreciate it.

Rowley, Mass.

[Several times there have appeared statements to the effect that, when proper and complete pollination takes place, the ordinary light frosts of the spring will do little or no damage. Prof. F. A. Waugh, author of numerous books on fruit culture, and probably as good an authority as there is in the United States, to whom this was forwarded, makes the following reply:—ED.]

Mr. E. R. Root:—The letter from Mr. Adams is very interesting. I have never heard this claim made before, and of course do not know of any practical or scientific observations bearing on it. It is true, of course, as a general statement, that bees assist very materially in the pollination of fruit-blossoms; and in critical times, such as partial damage by frost, this assistance would count for a good deal. Aside from this indirect and wholly problematic assistance, it is difficult to see how the bees could accomplish the results claimed.

Amherst, Mass.

F. A. Waugh.

MANY A BEEKEEPER CAN MAKE HIS OWN HIVES

BY E. E. COLIEN

The article by Lewis L. Winship, page 1022, Dec. 15, contains some rather exaggerated statements. His illogical expressions, such as "the average home-made hives are fit for nothing so much as kindling-wood," invite contradiction.

In defense of the home-made goods, and of the ability of the ordinary workman to produce an article in every way as good as the factory-made, I herewith present a picture of one of my own make of hives and

supers. Mr. Winship admits that a few beekeepers can make their own hives, but charges that they usually try to economize in every possible way; and the hive, when finished, usually looks like the one in his illustration. He says, further on, that "the hive shown is *better* than the average run of home-made hives, and you must be quite a carpenter to make one as good."

I deny his theory, and call attention to the hive herewith presented in refutation of

his statement. I am not a carpenter, have never shingled a square, nailed on a piece of siding, nor hung a door. But I *have* been a farmer. I am past 70 years of age, and farming has been my occupation from boyhood.

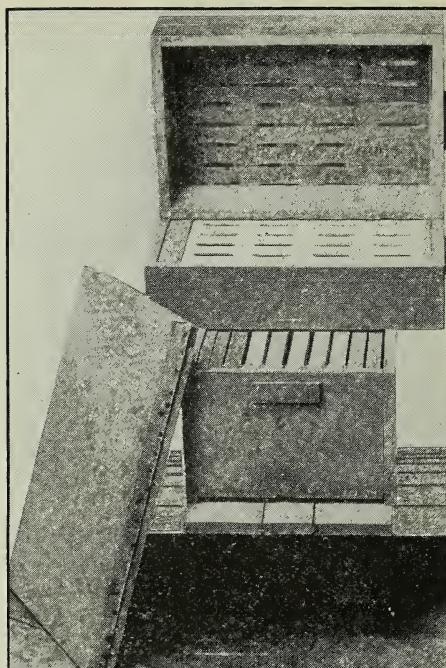
Fifteen years ago I started gardening, and eight years later I added beekeeping to my employment. I started with two colonies; had never managed or seen bees managed, but subscribed for GLEANINGS and bought an A B C of Bee Culture; studied carefully and kept bees profitably on the information thus gleaned.

Five years ago the present winter I made up 30 hives and 60 supers, and you have in the picture before you one of these hives after five years of service on the summer stand. You will observe its still prime condition. The nailing was done with cement-coated nails, and every hive was painted at once. Today you can scarcely find an opening at any of the joints that will admit a pin to the interior.

I am producing comb honey exclusively, and my crop the past season exceeded a ton and a quarter from 40 colonies, spring count, and I made an increase of thirty colonies. My honey, all white, netted me 15 cts. per pound on the Chicago market, or \$375. I sold 13 colonies of bees for \$45.00 more, making in all \$420, and an addition of 17 colonies for the season's work in my apiary.

The foregoing is from an amateur who makes his own hives and supers, and advocates economy, not only as a privilege but as a duty.

If what I have done as an ordinary workman proves to the unbiased mind what the average beekeeper can do, does it not appeal



Not a bad job for a home-made hive.

to common sense that all over this country may be found beemen who, during the long winter months of otherwise enforced idleness, make up their own hives and supers, in which the bees find comfort and safety despite the deplorable picture by Mr. Winship, and his statement that ninety per cent of the home-made hives are not fit to keep bees in?

Manana, Wis.

FASTING VS. SMOKE

BY J. M. BUCHANAN

A writer in the New York *Sun* gives the following simple method of writing poetry:

Webster has the words, and I
Pick them up from where they lie,
Here a word, and there a word,
It's so easy it's absurd,
Merely range them in a row—
Webster's done the work, you know.

Thus it seems that anybody ought to be able to write poetry.

A writer in GLEANINGS gives the following simple method of introducing queens: "Close the entrance, all but an inch; blow in plenty of smoke; close entirely for a quarter of a minute; then run in the queen,

and close again for ten minutes." Easy, isn't it? "It's so easy it's absurd"—until you try it. Then follows a page or more of "qualifying conditions," a sort of *sine qua non*—page 108, Feb. 1.

Let's look at some of these. First, the hive must be smoke-tight. How many hives in a thousand, taking the average apiary, will you find perfectly tight at all joints and corners? Possibly two or three. Second, the smoke must be just the right kind, just thick enough, but not too thick. Third, there must be just enough smoke, but not too much. How is the average beekeeper to judge these things? Then the hive to be

requeened should be without supers or upper stories. Does the author of the smoke plan know that in some parts of the country supers or upper stories are kept on the hives the year round, and it is not considered poor beekeeping, either?

Now, I have the highest regard for Mr. Miller. He is an original customer. He has the courage to leave the beaten paths, and go forth and find. For that I admire him. And he generally finds something worth while. No doubt, with his intimate knowledge of bee behavior he can make use of the smoke-in method with a very small per cent of loss. But the average beekeeper does not realize the qualifying conditions, and so he fails. At least, so many have failed that this can hardly be called a successful method.

Let us look at the so-called "starvation" or fasting plan. As I use it, this plan differs somewhat from the Simmins plan. The essentials are these: See that the colony is without queen or queen-cells; confine the queen alone, and without food, for forty-five minutes; push the hive cover or super over an inch or so, blow a puff or two of smoke into this opening, and let the queen run

down among the frames; then replace the cover, and the work is done.

Now for results, and that is what counts. Out of hundreds of queens introduced by this method, my loss has been less than one per cent; and there are hundreds of beekeepers in this and other states who are using this plan with uniform success, and who will bear me out in this experience. I have failed a few times in trying to introduce to laying-worker colonies; but, as Mr. Miller well says, that is poor beekeeping. I would not advise this nor any other method in that case, nor when the bees are engaged in robbing.

You don't have to wait till dark. I introduce any queen, any time, anywhere I want to, and the beauty of it is that anybody else can do the same. Under the best conditions I have lost twenty per cent of queens introduced by the antiquated cage-and-candy plan, and I don't believe others who use it have much better success. That may be a good thing for the queen-breeders so long as they don't guarantee safe introduction. If you are looking for a safe and sane method, try the fasting plan.

Franklin, Tenn.

A LARGE PRODUCER MUST BE A SMALL PRODUCER AT THE START

BY J. B. DONOHO

In 1912 I found a bee-tree near my home. I sawed off the section of the trunk containing the colony, and brought it to the house and set it in one corner of the yard. I watched them as tho I had a gold-mine, but they swarmed in a few days, and all left the stump. I don't blame them much when I think of the house I had provided for them. Then I bought some bees in box hives—five colonies in all. I soon found, however, that I had started beekeeping the wrong way.

The following winter I bought enough hives to transfer all my colonies, and transferred the first one March 4, and by the last of March I had all five in new clean hives with full sheets of foundation, using what young brood they had in good straight combs also. You see I had bought an A B C and X Y Z of Bee Culture, and had learned a little about bees.

As soon as possible I divided and made ten colonies, getting a fair yield of honey that season.

In 1914 I increased to 23, reserving 5 to be run for honey, and running the other five for increase. I succeeded in getting some honey from some of the colonies run

for increase. I got over 200 pounds from one of the colonies run for honey, making a little over 1000 pounds of honey from my apiary that year.

I lost 3 colonies the following winter; but in the spring of 1915 I increased to 45 and got a fair yield of honey, about 50 pounds to the colony. I hope to increase to 100 colonies next spring.

It takes a little common sense and backbone to start into beekeeping. Mr. Scholl thinks the one-horse beekeeper ought to quit and go away back and sit down. I agree with him, since by his ignorance he runs prices down; but I want to know how any man, not knowing much about bees, can start in the business without starting the one-horse way. If some one had given me 200 colonies before I learned anything about them I should not have known what to do with them, and the whole thing would have gone to the scrap-pile. I just wonder how many colonies Mr. Scholl himself started with.

I sell all of my honey in my home town, and cannot fill all of the orders I get. For comb honey I get 18 cts. a pound, and for bulk comb honey 12½.

Grandview, Texas.



THE APIARY FROM WHICH THE BEES STING(?) THE GRAPES.

My apiary is in the center of a town—Twin Grove—having a population of 40. I have never had any trouble with the neighbors with the exception of one man at the far end of the town who complains of the bees bothering his grapes. He tries to make out that the bees sting the grapes, and then take out the sweet.

JAMES D. BENSON, Juda, Wis.

HONEY PRODUCTION AS A BUSINESS IN THE HAWAIIAN ISLANDS, AS SEEN BY A MALIHINI

BY LESLIE BURR

Beekeepers sometimes move from one location to another; and while they do not move very often, yet they are always talking about moving. In fact, I do not remember any beekeeper with whom I am well acquainted but has expressed the idea that he thought that, if he were in some other and distant location, he could make more out of his bees. For the benefit of those who want to move from their present location to some distant land, I am going to describe the conditions here at the Paradise of the Pacific, the Hawaiian Islands.

The Hawaiian Islands are a territory of the United States, within the tropics, and at a distance of over 2000 miles from California. There is no foul brood nor any other disease to be contended with, nor winter losses. The beekeepers do but very little of the actual work themselves. They hire Japanese to do it for them, and the Japanese make good help, and work at very low wages. The principal honey-plant is the algaroba, and there is plenty of it.

Now, all those who want to come to Honolulu, hold up your hands. Well, I see my old friend Summerford, Hickox—yes, and there is Claude Hill, but he says that his

better half says he had better stay in Ohio, and several others.

Now that I have you fellows hooked, I will tell you some more about the Hawaiian Islands: First, that while the country in and about Honolulu is good bee country, it is overstocked. At the present time there are twice as many colonies as there should be. The apiaries are owned by Japanese, and they have an apiary just about every place where they can put one. If you desire to work outside of Honolulu, you are in worse luck. Everything here is big corporations, and that applies to honey production. One company has 5500 colonies, and there are others almost as large. Those corporations control all the good locations, and they have bees on them. But then, I know that some of you fellows, if you were here, would get an apiary or so located somewhere, so I will tell you what other troubles you would meet. So here is the second batch of difficulties: Ants are a pest, so that special hive-stands have to be constructed. These stands are of two parts—an upper part and a lower one, the upper section being placed upon iron supports, and the supports being covered with oil so

that the ants cannot climb them. As to the quality of the honey produced, aside from the algaroba honey, which comes in the summer, it is all vile stuff. Perhaps I had better say that it is the poorest grade of honey I ever saw. As to the market, prior to the war in Europe the honey went to Germany, but now there is no market for it, and at the present time the crop of the past season is in storage in Honolulu, and indications are that it is going to remain in storage for some time.

In my opinion the outlook for the honey-producers at the present time—well, it is not dark. The only word that will suffice

is *black*. What will the outcome be? Well, I am not bothering my head, neither should you fellows. You have troubles of your own.

As to local markets, there is a market here, and no doubt it could be greatly increased. As a matter of fact, people are at work, and honey in bottles has within the last few weeks been placed upon the market. The honey is bottled by a bottling company on the Pacific Coast, and the honey in the bottles is California honey. You see the Hawaiian honey is in storage awaiting the end of the war in Europe.

Honolulu, Hawaiian Islands.

AS GLIMPSED THRU THE CAMERA

Some Common and Uncommon Sights

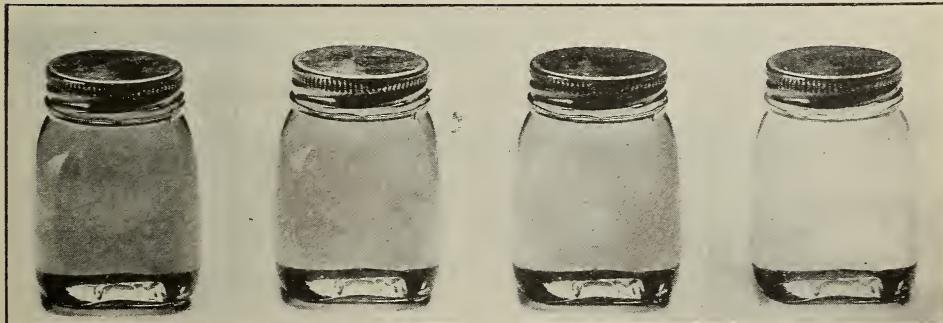
BY H. H. ROOT

Did you ever stop to think that most photographs of an exhibit of honey show what looks to be more like an exhibit of ink? Even light-colored honey takes very dark, and a photograph of dark honey makes black ink look pale. The trouble is due to using the ordinary photographic plate on which to take the picture, and neglecting to use what is known as a filter. The average photographic plate and film is oversensitive to blue and violet, and undersensitive to yellow and orange. This means that the plate does not record much reflected light from the yellow honey—not much more, in fact, than if it were black, hence the very dark appearance of the honey.

Panchromatic plates, on the other hand, are sensitive to all colors, as indicated by the name; and when used with the proper "filter" the true shade or tone of the color desired can be preserved. While I have not tried them, I believe that good orthochro-

matic plates would answer just as well for honey as the panchromatics.

The illustration shows four pictures of the same jar of honey, photographed and printed under exactly the same conditions, aside from the use of different plates and filters. The honey in the jar was very light—very light yellow, in fact—and it was placed on a pure-white card so that it would show as light as possible. Even under these favorable conditions, taking the picture on an ordinary plate (Seed 23) as shown in the first illustration made the honey appear like a dark amber. If the honey itself had really been an amber honey, this first picture would have shown the honey very dark—almost black. The second picture of the series was taken in exactly the same way, except that a panchromatic plate (Standard Panchromatic) was used. Notice that the honey appears a little lighter. The third picture was made with a panchromatic



Four pictures of the same jar of honey. No. 1.—Photographed on Seed 23 plate, no filter. No. 2.—Photographed on Panchromatic plate, no filter. No. 3.—Photographed on Panchromatic plate, K1 filter. No. 4.—Photographed on Panchromatic plate, K3 filter.

plate, but with a very light-yellow filter over the lens, known as the "K-1." The last picture was taken on a panchromatic plate with a "K-3" filter, which, as can be seen, has the effect of making the honey appear almost water-white. The "K-3" filter and the panchromatic plate is the right combination for average photographing of honey; but under very favorable circumstances where the honey is very light, and has a

white background, the "K-1" filter gives about the right tone. Beekeepers who own cameras might not be able to use just this combination, especially in case of film cameras; but if a photographer is employed, insist on his using a "K-3" filter and a panchromatic plate. Your picture will then look like your exhibit, and not like an exhibit of Carter's ink. Figures may not lie, but pictures can.

SOWING SWEET CLOVER WITH OATS

BY FRANK COVERDALE

1. I have a piece of land from which a corn crop was taken last fall. I wish to get it seeded to sweet clover as soon as possible. Will it do as well if sown with oats as if sown broadcast alone in the spring?

2. If sown alone will it be better to sow it without breaking up the ground in any way (ground being firm and quite even) or would it pay me to disk it and harrow once? I have to hire all work done, so if disking is not necessary it would be an advantage financially.

Granville, Mich.

W. M. P. Jerrett.

Mr. Jerrett is located at Granville, Mich., where I rather think his land will not be so dry as to prevent him from getting a good growth. I would recommend making a test for acid, however. To do this, secure from a druggist a few sheets of litmus paper. Stick a spade three inches into moist surface soil; withdraw the blade and put in a sheet of litmus and press the soil tightly against the paper for ten minutes. After removal, if the litmus paper has turned pink, lime is needed for best results. However, if there is only a slight pink color on the paper it is possible to get along without the lime.

In either case, Early Champion oats is the best variety to seed with. Sow a third less than the usual seeding of oats. It is a pretty good plan to inoculate the seed. I prefer the glue and dust method when it is

done right. Select some soil three inches under the surface, where sweet clover has grown for years. Dry it in a cellar—not quite dry, but so it will pulverize nicely. Moisten the seed well with glue water that is just a little sticky when put between your finger and thumb. Mix thoroly, allowing all the dirt possible to hang to the seed. I have had the best results by sowing this inoculated seed by hand, because in this way the dirt sticks to the seed, whereas a seeder rubs and grinds it loose. None of the extras need be put on where sweet clover has been growing in late years. Do not allow the sunlight to strike the seed before covering.

Referring to the second question, it will pay Mr. Jerrett to make a seed-bed on the surface, cultivating it quite well, as the white sweet clover always makes a stronger growth on such prepared land. It is always the poorly cultivated as well as the corners that are missed that do the poorest.

If the soil cuts in well, one good harrowing will be sufficient. If not, double and harrow. It probably would not pay to plow unless the land is a tough sod. I always plow such fields with good results, and secure a good deal of seed or hay the first season.

If Mr. Jerrett should not want to disk or plow the ground I would advise sowing the seed in March just as the snow is going off. Delmar, Iowa.

TWO FORMS OF BEE PARALYSIS IN JAMAICA

BY C. N. EDDOWES

Having read two articles recently on the subject of paralysis in bees, the last by Mr. M. Y. Calcutt, page 990, Dec. 15, I was induced to take up the subject again. In an article on page 881, Dec. 1, 1913, will be found my experiments, and the results obtained by breeding to obtain stock immune to this disease. As Mr. Calcutt does not

give a full description of the appearance of the bees when suffering from paralysis, and as there will probably be a question whether paralysis in Jamaica is the same as that in the United States, I will give a full description of the bees as they appear when attacked by the disease here.

There are two forms of the disease, the

first being very fatal, and, so far as my experience goes, impossible to cure. In the second, the bees in some cases appear to recover without any external aid.

I will now proceed to describe the two forms. In the first, the abdomens of the bees are not distended; in fact, they are somewhat shrunken, and have a smooth sticky appearance, and are darker in color than healthy bees, and have the characteristic quivering of the wings and legs, but are able to fly to a certain extent. In consequence of this, the number of bees seen dead in front of the hives, and clustering on the grass, is not as great as in the second form, as the majority of the bees fly for a short distance before collapsing. In this form the drones are very often attacked, and sometimes, but rarely, the queen. In the second form, the bees' abdomens are greatly distended by accumulated feces. Their coloring and appearance, other than that of the trembling of the wings and legs, do not differ from that of a healthy bee. None of the bees are able to fly and crawl out of the hive and fall to the ground. In bad cases they cluster in bunches of from ten to thirty.

In neither form is there any sign of dysentery. Both these forms of disease have existed in Jamaica for a sufficient length of time for the native bees to have become to a very great extent immune; whereas the progeny of imported queens are generally

more or less susceptible. I am not able to say whether this disease is caused by the parasite *Nosema apis* or not, as I have not been able to have any bees examined, up to the present, but intend doing so as soon as possible.

As *Nosema apis* is known to affect bees in Brazil and the northern parts of South America, and the West India Islands, the probabilities are that *Nosema apis* is responsible for bee paralysis in Jamaica. There is, so far as I know, no cure.

In the second form of the disease mentioned in a former paragraph, where an apparent cure has been effected by the bees, it invariably breaks out again, and the colony eventually dies. Most commonly both forms are found in the same hive. It appears the only further help I can offer is to refer enquirers to the former article written by me. My subsequent experience since that article was written has justified my still adhering to my statement that the only cure for bee paralysis is to select and breed immune stock.

Half Way Tree, Jamaica, B. W. I.

[Instead of there being two forms of bee paralysis, we are inclined to think it is all one and the same disease under different stages of development. Possibly environment has a tendency to modify the form and the symptoms. See answer to Mr. Cox in this issue.—Ed.]

THE NEW BEE DISEASE AND AN ALLEGED SURE CURE FOR IT

BY ADAM A. CLARKE

I have been reading all the descriptions of what you call the new bee disease, in *GLEANINGS* for Jan. 15. I have also read the editor's comments on it, and will say that, in my opinion, he has not missed it far when he says it is only paralysis. I have had a good many cases of this disease the past ten years, and, like all the rest of the beekeepers who give a description of it, have found it hard to cure, for, if not treated successfully in the first stages, it will soon cause severe loss, for it not only destroys the colony but your chance for securing a crop of honey is at stake also.

I notice that our oldest experts in the business are at a loss to find or give a cure for it, but say that it will disappear with the advent of warm weather. This is partly true; but a good many colonies will also disappear before it warms up. I have no fear of it any more. I can treat it successfully, after trying everything recommend-

ed in all the bee literature I could get hold of, and, not getting any satisfactory results, I experimented according to my own ideas, and have hit the nail square on the head. It costs next to nothing to stop it. This is the cure:

As soon as you see the effects showing up in any colony, take common lime fresh slaked, and keep this all around the entrance of the affected colony, using some (fresh) every day. Be sure to get it on all the bunches of bees that get some distance away from the hive. Do not use too much lime at one time—just enough to kill all the sick bees and keep the entrance of the hive disinfected. In a few days there will be no more dead bees around the hive. Then I open the hive and note the conditions inside. If only a few bees and the queen are left I take them with the combs they are on, putting them in a fresh hive, leave them in the same place, at the same time giving

them a frame of hatching brood from some other colony. Thus I have not had it fail to cure. The rest of the combs I have used in any place in the yard, and have never seen any ill effects from using them thus.

If the disease is of long standing the combs have a very foul smell. They should first be exposed to the light and air, when, in a few days, they will have lost this smell, and are ready to use. I notice that where there are only a few bees left with the queen the brood hatched from the frame given them will soon supersede the queen;

so in severe cases the queen becomes weakened.

I hope that all readers of this the coming season will give it a trial; and if my directions are minutely carried out, there is no need of losing a single colony.

Le Mars, Ia.

[From what we have read of this disease in other localities we are not so sure that the lime treatment would be an infallible cure. It is worth trying, however, as it is so simple to apply.—ED.]

NOSEMA APIS, OR BEE PARALYSIS; A NEW WAY OF APPLYING THE SULPHUR CURE THAT SEEMS TO BE A SUCCESS

BY J. SAMUEL COX

On page 784, Oct. 1, I came across the following question: "Nosema apis, Bee Paralysis, or what?" and reading the subject following I was surprised to see that, altho far away in another country, I am not alone, but like those who have suffered and are suffering. Altho I am not altogether out of the woods I can safely say, "Thank you, that the worst is over, for my workers are no longer dying as heretofore by this strange disease. On the contrary, all my weak colonies are getting strong again, from many of which I am now extracting a full-depth super of honey, and, from a few others, two. The only thing I have not yet got rid of altogether is the dying of the brood; but even this I have reduced to about 5 per cent, and I am confident in a very short time I shall get rid of the disease entirely."

According to descriptions given, my apiary has suffered from the same thing, and I can confidently say that the brood of this apiary has not died either from neglect or starvation; for as soon as I noticed this dying of the bees I made a general examination of all my colonies; and while some were greatly reduced in bees, the majority were still crowded with busy workers; and even among these very strong ones the dead larvæ and some brood were found in some combs more than others. Just a little before this a light flow started, and the bees were working fairly well, insomuch that, when I first saw the bees crawling on the ground in the morning, I concluded that they had come home laden with honey and had fallen on the ground; and as my hives are about 6 or 7 inches from the ground I got strips of board cut to convenient lengths and leaned them up from the ground to the alighting-board; but none of the bees would

go up or showed the least desire to return to their hives.

I do not remember exactly what date I first noticed this dying of workers; but some time about the last week of June I noticed here and there a few bunches of dead bees which increased daily until the ground of the entire apiary was nearly covered.

Seeing the victims crawling on the ground much the same as with paralysis, I was inclined to think it was that disease. Altho I have had to do with that disease several times years ago, I have never seen such a scourge among bees as I was then having in all my beekeeping days; for surely if I had not found a cure, this apiary must have been wiped out ere this.

I went from hive to hive, watching the entrance to see the bees taking out their sick ones, but never could I see any. It seemed as if as soon as they felt sick they rushed out, and, not being able to fly, dropped and walked around until they died.

I examined the brood-nests, and found several greatly reduced in bees; and in some colonies I found one or two combs with dead larvæ here and there; in others, more; but these dead larvæ were not confined to weak colonies alone, for even among the strong ones, upon examination of these larvæ, not the slightest sign of ropiness was visible. When pierced with a pin a liquid of a light brown color would drop out as freely as a drop of water. This color was not confined to all, but each had its own, according to age. The larvæ of about four to six days are perfectly white. In some frames I found the larvæ were perfectly dry, and did not stick on to any part of their cells, as they would shake in the cells if the frame was shaken.

Seeing the bees dying out so rapidly I

thought the best thing to do was to try to find a remedy as soon as possible. Remembering that sulphur is good in case of paralysis I resolved at once to give it a trial. I looked up the A B C and X Y Z, and this encouraged me to give the sulphur a trial. I concluded, however, that, as sprinkling the combs is injurious to the larvæ, I would try another plan. Accordingly, I opened the hives and took out all affected brood, and gave full sheets of foundation in their place. I sprinkled on top of the frames of the brood-nest a mixture of honey, sulphur, and water, putting enough honey to sweeten, so that the bees would feed on it readily, and for the further reason that the bees that do not leave the hive had indoor feed. I also gave them a general open-air feeding of this same mixture every day for two weeks. This, for two reasons, they did not seem to notice for a whole day. First, I put in enough sulphur to give the feed a slight smell. This in a measure destroyed the honey odor. Second, as already stated, there was a light honey-flow on, especially in the morning, and all beekeepers know that bees work more readily on nectar than anything else. After a few days, however, they drank up all that was given each day. This worked with great success, for at the termination of a week the death-rate was greatly reduced, and in three weeks not a bee was seen bumping about, ready to die.

The curing of the dead larvæ is the most difficult, for even in the new frames I had given were found later on the same dead larvæ here and there. The only cure I have

found for this is to give each colony a new and vigorous queen.

Guayama, Porto Rico.

[There have been numerous reports to the effect that sulphur in some form or other has not only helped but in some cases cured the peculiar disease known under various names such as *Nosema apis*, bee paralysis, Isle of Wight disease, etc. Mr. O. O. Poppleton, of Florida, a conservative and careful beekeeper, and who has had a very large experience with bee paralysis, stated that powdered sulphur sprinkled on the combs and bees would effect a cure; but the process is rather slow. Sulphur is a well-known antiseptic, and we see no reason why it might not effect a cure if applied in the manner described by Mr. Cox.

The disease has been so rampant and destructive in some parts of the world that we can well afford to grasp at every straw, especially as the reports regarding the use of sulphur as a cure have been favorable.

This fact also lends color to the theory that the Isle of Wight disease, *Nosema apis*, and bee paralysis are all one and the same thing, but modified by environment and the peculiarities of the season. In damp climates and in damp seasons, and particularly in tropical climates, this three-in-one disease, if we may so call it, is much worse than when it breaks out in localities further north in a dry atmosphere.

Taking it all in all, we would request our readers to try out Mr. Cox's remedy; and if that fails, try out the one recommended by Mr. Clarke.—ED.]

MY FIRST SEASON'S EXPERIENCE AS A BEEKEEPER

BY DR. A. P. BETTS

In April, 1915, I bought twenty colonies of bees from one Joseph Smith, a veteran beekeeper. The colonies were in eight-frame hives and in good condition. Smith had 160 colonies, and sold me a score of them for \$100, because he said he had more than he wanted.

I had never opened a hive nor hived a swarm nor seen a queen or a frame of brood. I told him just how things were, and he said I was "taking a pretty big contract," but if I wanted the bees he would take my money. "But, honest, Doc, I would advise you to take two or three colonies for the first year."

I gave Smith his money, and said I would take my chance, and that all I ever got was by doing something that some one else could not do. So he brought over the bees in a

spring wagon, twelve miles. It was very early in the morning of April 24, 1915. I remember it very distinctly. The day was clear and warm. Smith helped me set the bees in place, gave them a little smoke from his own pipe, and took the screens from the entrances. He chatted awhile, and then drove off.

Just before leaving he turned his head and said that if I needed any help I should let him know, and he would help me all he could. I thought I saw a flicker of a smile on his face as he drove away. Now, if there is anything more than another that put "pep" into me it was that grin on Smith's face. I think it was worth more than money to me as the months went by. Whenever a difficulty arose or a new problem had to be solved, when I was almost at my wits' end,

there was Joe's face with that incredulous smile.

The stimulating effect was wonderful. I bought all the bee journals and books about bees that I thought would help me and read them on every occasion that I had time. As this article is principally for the benefit of amateurs and not for the amusement of the professionals, I will speak of some of the difficulties to be overcome.

When Joe left I put on my veil and gloves and sat down to think it over. The warm sun came out, so did the bees. I didn't think we could buy so many for \$100. They made me think of a lot of Indians that I once met on the plains. They were about as careless with their weapons. The first thing I did was to open a hive. It looked very interesting to me. There were three or four frames of brood, but at that time I could not understand what all that brown capping meant until I opened several.

There were many little burrs of comb between the frames which I decided to clean off. Cleanliness is next to godliness, so in the next day or two I cleaned up the rest of the hives. Here is where I made my first mistake, for in my tinkering I lost four queens as I afterward discovered.

As I intended to run my apiary for comb honey the swarming question was all the more absorbing for me. I concluded to try the Alexander plan of increase on the sixteen remaining colonies. This was my second mistake. It afterward turned out, how-

ever, that it was a good thing I did it, for the season was poor for June honey, and I got the increase but no June honey. There was no swarming to speak of in the sixteen colonies divided nor in the increase, but those four colonies with queen-cells were surely a caution. In the future, when I need a queen for increase or any other purpose I will buy a laying one. It is more economical and less bother, especially when they can be bought for 50 or 75 cts.

In a good fall flow the bees got enough for winter (all except a few which I united in the fall), and a fair surplus for a beginner, considering the season and other things.

The honey sold at 15 cents per pound. Adding the value of this to the value of increase at \$5.00 per colony, deducting \$12.00 for Italian queens, and not counting my time, I have made \$3.40 each, or \$68, on the twenty colonies, and a world of experience which money can't buy. The \$100 at interest would bring me only \$6.00. To sum up, I think I made a good investment, especially when one considers that I now have thirty good colonies in the cellar, which are wintering well.

In the future I shall run for extracted honey. I believe that, with the help of Joe's grin (which still haunts me), and the A B C and X Y Z, and Miller and Alexander and several journals, I may give a good account of myself and the bees this coming summer.

Wauseon, Ohio.

MAKING FRAMES EASIER OF ACCESS

BY L. E. KERR

Some of the most pleasant hours in all my beekeeping experience have been spent in working over new problems in hive construction. Langstroth did not expect others to work out all the fine points of removable frames; tho, as yet, the best of them at times come remarkably near being unmovable.

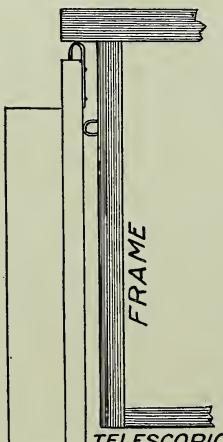
In an apiary of no more than a few colonies one soon learns to realize the difference in the way frames loosen from the various hives. One of the very first colonies that I ever owned was in a home-made telescopic hive the frames of which could be removed far more readily than those of the much lauded factory-made hive of today. The having ever since considered, more or less, a means of adapting its unusual frame rests to a cheaper and simpler hive, no entirely satisfactory solution has been forthcoming, and it is here submitted to the beekeeping public in hopes that an-

other may show how a plain (or at least plainer) hive may be so provided.

Upon this rabbit the frames are raised above the hive-ends, tho not necessarily the sides. As the cut plainly illustrates, frames are consequently tenfold more easy of access.

Supering with the rabbit shown is more complicated, and has, so far, been accomplished by substituting $\frac{1}{4}$ -inch wooden rests for the customary flat tins.

Fort Smith, Ark.



Heads of Grain From Different Fields



The Backlot Buzzer

BY J. H. DONAHEY

Mother says it is all right to give rye flour and oatmeal for pollen in the early spring, but if it is for the baby bees it ought to be pasteurized.

How the Climate of Florida Differs from that of California.

I have been reading your articles in *Gleanings*, and have been especially interested in what you say regarding Florida. Will you kindly write me a line, stating how southern Florida compares with California as to climate and fruit and vegetable products in your estimation, as I understand you have been in both places?

Chicago, Ill.

D. Zinser:

[In a general way the climate of Florida is a little warmer, taking the state as a whole, than that of California. California will have any climate you desire, either by going northward up the state, or by going up into the mountains. Florida, on the other hand, is comparatively level; and the fact that it is surrounded by water makes the climate very moist or humid. Those persons who cannot very well stand dampness, especially nights and mornings, would find that the Florida climate would not be adapted to their conditions.

In Florida, for example, if a sheet or clothing of any sort is left out on a line over night it will be dripping wet by morning. Of course, this is not invariably so, but is very apt to be so during the dryer part of the year when the dews and fogs are very heavy.

In California the climate is comparatively dry; and while it does not get so warm as it does in Florida, the temperature of southern California, at least, is more uniform. There are certain kinds of fruit and other vegetation that can be grown in Florida that cannot be grown in California, and the reverse is also true.

When we speak of California we must remember that it is large enough to comprise the area of several ordinary states in the East, so that everything depends upon what is meant when we speak of California. The territory, say fifty miles north of Los Angeles and down to San Diego, comprises the warmer part of the state, and is a good deal like that in Florida, with the difference that it is dry, and more uniform from one year's end to the other. Both states have rainy seasons. Central and northern California is more like Georgia and Alabama. It would pay you to go to Florida, at least, and spend a month or so, and then go to California. You can then better decide which state suits you best.—Ed.]

Shall a Successful Farmer Give up Farming and Go into Beekeeping on a Large Scale?

I am seeking a little advice; and as you know of the possibilities of beekeeping I want to ask you if you think from a financial standpoint a young man can do as well as to engage in general farming. Men who bought land 10 to 15 years ago have made considerable thru increase in land values; but any desirable land here is from \$100 to \$150 per acre, and I question as much of an increase in the future.

I am married—have three children; am 34 years old; weigh 135 lbs.; have \$2100 on interest and \$1200 worth of stock and machinery. I sold my farm last spring and am renting at present. I have 40 colonies of bees and a good location, and there are several good unoccupied places for outyards.

I am naturally a good beekeeper, I believe, and have been fairly successful with my bees, but have always been rushed for time on account of farmwork. I love a farm and outdoor life, and enjoy the beework better than any other; but my duty to my family is to follow the course which will give them the best opportunities.

I have a chance to buy the 50 acres, good soil I am renting one mile from town (my home town) for \$7500; \$2000 down, long time on balance. Now, of course, I know it will take a good many years to pay for this; but I could do it, tho it would mean a great deal of heavy work at times. We are hustlers, all of us; and as my boy will probably not be large he will be a better help in the apiary than on a dairy farm. We are good savers; and, altho we aren't as husky as a farmer and his family should be, we are

contemplating buying this; but if we can do as well with more bees, we may extend our bee operations and buy a smaller home.

Kilbourn, Wis. H. W. Loomis.

[Your question is a hard one to answer, as so much depends on your locality, your farm, yourself, as well as the members of the family. Generally speaking, we would say that, if one has made a success of farming, he had better stick to it. In any event, we would not advocate a radical change all at once. In your case we would advise you to continue on in your farming on your rented farm where you are, gradually expanding your beekeeping operations. This you can do without very great expense by taking bees on shares, and managing a series of outyards. In that way you will secure a certain amount of increase and some honey. Operate this way for two or three years, hiring the work done on the farm, but be sure you keep a direct supervision over all the work done.

Our belief is that the right kind of man in a good locality will make more money by keeping bees than by running a small farm. A fifty-acre farm intensively operated can be made to yield large returns; but as a general thing the average farmer seems to think he must have a hundred acres.

If you have an eye to going into beekeeping some time, continue making increase until you can get all you can handle; but you should not have less than 400 or 500 colonies; and if you operate more than this number you will probably have to hire help a part of the year. Everything will depend on you, your locality, the character of your soil, and whether you keep abreast with the times.

If you have growing boys who are enthusiastic with you, you will have a big advantage; but if you have to hire all your help, and that help is incompetent and high-priced, you will have to confine your operations down to what you can do yourself. In that case, a fifty-acre farm or 400 or 500 colonies will be all you can handle. You cannot very well work more than 100 colonies in connection with a fifty-acre farm and then you would have to have pretty good help from your boys, your wife, and your daughters.

No one can succeed in either line of business unless he takes several papers relating to those lines, and carefully planning so that there will be no waste movements. After you have read up, unlimited patience will be essential, because your full returns will not be forthcoming the first season nor perhaps for several seasons.—Ed.]

Is It Necessary to have an Inspector's Certificate on Every Package?

I wish to make some inquiries about shipping bees. Our agent of the express company tells me that I cannot in the future ship any bees unless they are inspected by an inspector, and each shipment is accom-

panied by the inspector's certificate. We have no foul-brood law nor inspector in Maine. I have in the past had quite a large trade in bees from Massachusetts. According to his statement, as there is no inspector near, if I have to get that on every shipment, my bee-trade is entirely cut off.

J. B. Mason.

Mechanic Falls, Me., Feb. 23.

[While it is true there is no bee-inspection law in Maine, and while it is true you do not need any inspection card, or certificate of inspection, for shipments of bees in Maine and a great many states of the Union, yet you do need such certificates for states like Massachusetts that have rigid bee-inspection laws. As a general precaution it is wise to have such a certificate go out with every package of bees.

In your case you are placed in an embarrassing position for the simple reason that you have no inspector who can furnish you with the necessary statement. We don't know what you can do except to get a foul-brood law before your legislature and get it passed. It will be difficult for you to get a large appropriation the first year. If you asked for a mere nominal appropriation and then had some one appointed inspector who could inspect your bees you would then be able to send out a certificate like all the other bee-raisers of the country.—Ed.]

Feeding by Filling Combs with Syrup

Last fall I had the same experience that many other beemen had. In mid-summer I removed all the honey from my bees that I could get, and extracted it, expecting my bees to gather enough more from the fall flow to run them thru the winter; but on account of the incessant rain the fall flow failed to materialize, and so I had to buy barrels of sugar and go to feeding.

I used the Boardman entrance feeder, and had considerable trouble because of robbing. Perhaps I was a little careless, however. I wondered why I could not put the syrup in the comb for the bees. Therefore I got one of my extracting bodies and frames which had the empty comb in. I then melted the sugar and made a thin syrup. I took the frame of empty comb and laid it flat and poured the comb full of the syrup. I then turned it over and held the comb at an angle of about 45 degrees, and poured the other side full. I filled as many of these frames as I wanted a colony to have, put them in the extracting-body, and set the body on the hive.

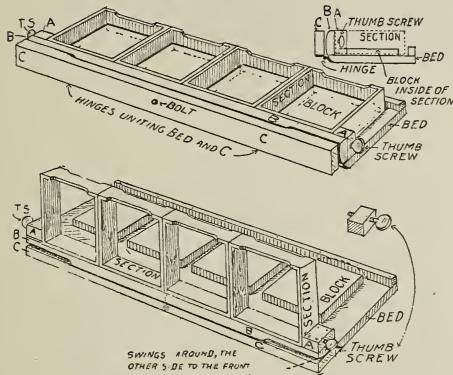
On examination I discovered that some of the colonies had scarcely any honey at all. When I found a colony in such a condition I would lift out an empty frame from their brood-chamber and put in one or more frames filled with syrup. My bees up to date are all healthy and strong; and if they continue to do so well I shall keep up this method of feeding for the young brood.

Brookville, Ind.

Darlie M. Hanna.

Form for Putting Starters in Sections

Some one else may have a form for putting in starters like the one I use, but I have never seen any mention of it. I have a rack as shown in the illustration, which holds four sections at a time, and which has spacing-blocks which center the foundation at exactly the right place.



The thumbscrew at each end of the rack holds the four sections tightly together so that they may be slung up or down on the hinges, and then when the melted wax is applied to one side of the foundation four sections may be swung around so that the wax may be applied to the other side if desired.

Cabot, Pa.

Wm. F. Ebert.

How Much Sugar Does It Take to Make a Pound of Bees?

Can you tell me about how many pounds of sugar it takes to make a pound of bees?

Isn't there a better way to hold Benton cages together in mailing queens than tying with twine? Wouldn't a paper tape such as you use to fasten the metal-spacer boxes together hold them?

Mayhew, Miss.

D. D. Stover.

[We have no accurate data. The nearest we have is the work done by Mr. W. A. Selser. He made the statement based on some experiments he made, that it took about \$2.00 worth of sugar to make a colony of bees. By colony he probably meant it would have four or five frames of brood, and possibly three pounds of bees. This \$2.00 worth of sugar was based on the valuation of sugar before the war came, or about \$5.65. The brood would be equal, probably, to two pounds of bees more if it were all allowed to hatch out, and this would make five pounds of bees for \$2.00 worth of sugar.

We do not know of any better way to hold mailing-eages together than by the use of strong string. If you nail little wooden cleats along the end they are liable to split, and one of the cages lose out. We have had some trouble where the cages were held together by little wooden strips and the nail driven thru into each cage.—Ed.]

Does It Pay to Feed in the Spring?

In reading "Fifty Years among the Bees," I conclude that Dr. Miller's location is very much like my own—that is, his honey sources are about the same, with the exception of cucumber bloom which he has from the fields of the growers for the pickle-factories. He is two degrees north of me, or about 150 miles, which makes his season a little shorter and a little later in the spring.

I wish to ask him if he believes it pays to stimulate bees between fruit bloom and white clover—that is, feed a little every day, no matter whether the bees have plenty of stores or not. If his location is like mine there is nothing yielding honey then except dandelion, and I have always practised feeding at that time; but I am doubtful if I am any the winner for it. My doubts are aroused by other bees in the neighborhood being about as strong as mine without the feeding. Of course, if the bees were short of stores they would need to be fed. Would it be best to feed in that case a little at a time or a big feed all at once?

Sabetha, Kan.

Frank Hill.

[Dr. Miller replies:]

In a locality where there is a dearth so long that the queen stops laying entirely, it is important, not only that the bees shall have on hand a good store of supplies, but that they be fed every day or two. The break between fruit-bloom and clover, at least in this locality, is not enough to stop the queen laying, provided abundant stores are in the hive, and I don't believe anything would be gained by frequent feeding. Of course, any shortage should be supplied; but it is just as well to give it at one time.

An Unusually Good Report from a City Apiary

I began with five colonies. I have sold honey to the value of \$45.75. Honey for home use, \$20.00. Sold the increase for \$20.00. Total income for the season, \$85.75. Expenditure was \$20.00. Net gain, \$65.75, or \$13.05 per colony, spring count, and this on a city lot 40 feet wide.

Des Moines, Ia. R. R. C. Grantham.

[Lest some beginner should think that such a record is always possible, perhaps we should add that Mr. Grantham has gone far beyond the average, almost the record, we should say, from a city apiary.—Ed.]

The First Flight in the Midst of a High Wind.

My bees had their first flight January 21; and because of a very strong south wind many of them were unable to get back to the hive, and so were chilled to death. The ground in front of each hive was covered. There are about forty hives in my apiary, so you can see the loss was great.

Sheldon, Ill., Feb. 11. C. L. McNealy.

Honey Necessary even for Prepared Paste

I see by *Stray Straws* that Dr. Miller has trouble in making labels stay on 5-lb. pails. A home-made paste with a little honey added will make it stick, but it will sour and mold under the label, and so is not very satisfactory.

The best thing I have found so far is a paste made by the National Can Co., which is made for labels, and which they say will stick to tin; but it would not always stick for me, however, until I added a little honey to it. It will not sour or mold, even after the honey is added, and will always stay. About a tablespoonful of honey is added, and if, upon trial, it will not stick, a little more honey is added. To make a label that goes half way around a can stick is a different proposition from one that goes all the way around, and the ends lap, or a label on glass when almost anything will stick.

Grosvenordale, Ct. Ernest Ryant.

A Good Paste for Labeling Tin

To make one cup of paste, melt a piece of glue about the size of a medium hazlenut, or two white beans. Next stir in a large tablespoonful of wheat flour. Mix in cold water, then bring it to a boil and stir. We never had this fail or come off. But if too much glue is used the label will get stiff and peel off.

The greatest tool ever used to clean frames, hives, and sections, is Dr. Miller's large overgrown putty-knife, or piece of a handsaw, two to three inches wide. But I have been waiting ten or fifteen years for some one to tell how to sharpen the edge. The old shoemaker's way of dulling his steel for scraping soles is simply to put it in the vise and rub the edge heavily until the corners turn over, making a flatter edge. It works best in cool weather. This tool will keep right on to the wood, and will plane the very varnish off, and will not lead into the wood. Try it.

Listowell, Ont., Can.

C. Mitchell.

Another Paste for Labeling Tin

To make paste sufficient for 30 or 40 labels, take about four tablespoonfuls of cold water, a small pinch of saleratus, and a lump of laundry starch about the size of a large walnut, and dissolve them together; then put them on the stove and cook to a paste. Use paste while warm, and you will have no trouble about labels coming off.

Ticonderoga, N. Y. George H. Adkins.

Wash the Tin with Soda

Tell your readers that they will have no trouble having labels stick to tin if they will first wash the tin with strong soda water, and then use good mucilage.

Forkville, Pa. W. L. Norton.

94 Pounds Per

Mrs. Allen, page 969, Dec. 1, 1915, speaks of the average yield per colony in North Carolina being very low, and the quality being nothing to boast of. Yes, that is the general cry; but I think I did pretty well for a poor season. I got an average yield of 94 lbs. per colony of honey that sold for 18 and 20 cents per lb. (this was comb honey) and an increase of a little over 57 per cent. Our main honey-flow, the sourwood, was a complete failure.

Hazel V. Boukemyer.
Randleman, N. C.

Blessing in Disguise, after All

I had muscular rheumatism in my right leg and arm, and so much that for two years I took electric treatments. My trouble would come and go—come so hard sometimes that I limped when walking, and my shoulder would ache so that I could not sleep nights.

The first year I had bees I was not troubled so much, the second year less, and so on until now for over two years I have had no trouble with it at all. I think that the stinging of the bees counteracted the poison that was in my system—any way, it is gone, and I assure you I had plenty of stings to do it, for the bees certainly got at me in good shape.

Rutland, Vt. J. H. Davenport.

Eucalyptus Tempting even in Bad Weather

My bees have been carrying in both honey and pollen every bright day all autumn and winter, and they even fly out into the rain and try to work, as a number of eucalyptus-trees are in bloom, and it is a great temptation to them. I am sure that I am losing quite a number from this cause, but see no way of preventing it. I can catch the odor of new honey when near the hives.

Millbrae, Cal. W. O. Graeber.

A Prayer

My Father, I thank thee for this day
Wherein a task was set for me,
That I might labor, and in my way
Share the blessings sent by thee.

My work may seem quite humble, Lord,
To those who do not understand;
For I care not for worldly hoard,
Nor noted fame throughout the land.

O Father! I'm content with these—
My simple home, my garden-plot,
And daily care I give my bees—
Dear Lord, I thank thee for my lot.

Elsa Rosalind Howell.
Indianapolis, Ind.

[This prayer was written by a little girl and was sent to *Gleanings* by Walter S. Pouder. We are very glad to give it a place here.—Ed.]

A. I. Root

OUR HOMES

Editor

EVOLUTION AND THE HONEYBEE; SOMETHING
FROM ONE WHO IS NOT A BEEKEEPER.

As a rule I do not think it best to give very much space to theories in place of practice; but the following kind letter from one who has never kept bees commends itself, as it brings before us once more matters so much discussed years ago when the Dzierzon theory first came out.

The writer is nearly 55 years young, and has preached the gospel 36 years. Early in life he heard in New Zealand a course of lectures on "World-making," by a noted scientist. He saw them ably reviewed. I have ever kept an open mind, adopting the following as a principle of action in life:

Listen, read—not to contradict or confute, nor to believe and take for granted, but to weigh and consider.

I have occasionally seen *GLEANINGS*. Yesterday I ate with a beeman. Of course we talked bees, read some after you, and, as usual, liked you for your writings. I decided to write to you. You can set me right if I am wrong. Assure me in my belief if I am right. I am interested in my problem because of its far-reaching meaning, as it touches the problem of the universe, of man and destiny.

I put it in the following form as the plainest and simplest one I know.

1. Bees are of three kinds—father bees, mother bees, and worker bees. (I do not pretend this to be accurate, but only for the purpose of this problem.)

2. Neither parent bee ever makes cells or gathers honey. (Is this quite true?)

3. Those which make cells and gather honey never become parents of young bees.

4. As those who have had experience in the work of making cells and honey never become parents, whatever experience they may acquire is lost in their death. It is never transmitted, there being no offspring from them.

5. Father bees, mother bees, parent bees, having no experience in making cells and gathering honey cannot transmit to their offspring what they have not got. What they do transmit is natural, not acquired.

6. The first bees that ever were must have had just as much ability as the present generations.

7. The first bees must have been created, and so the evolution of bees is impossible.

8. If these premises are correct, then this is a clear fact in nature, unaccounted for by the hypothesis of evolution; for then the bee must have been a direct creation.

My question now addressed to you as an expert beeman is to know whether it is true that the parent bees never work, never make cells, and never gather honey.

In other words, is it true that the transmission of acquired tendencies is impossible?

In asking you for a reply I am not looking for an extended letter. I know you are busy; but a few words from you will be very gratefully received. This I ask in a private letter rather than in your paper. I see *GLEANINGS* but rarely, not being myself a beeman.

H. GOODACRE.

Wolcott, Ind., July 26.

After reading the letter I submitted it to Ernest, who advised sending it to Dr. Miller, and asking for his reply. Below is Dr. Miller's answer:

The drones do no work of any kind in the hive, neither do they gather anything outside. The same

is true of the queen, except that she lays eggs. That is her sole function. So it is quite true that "the parent bees never work, never make cells, nor gather honey," with one slight exception. It happens in rare cases that a worker lays eggs, which never produce anything but drones, in which case that parent does all the work that any worker does. Yet that can hardly be said to have any bearing on the case, since practically that laying worker has no progeny, and so can transmit nothing.

So, on the face of it it would seem according to reason to conclude that the parent bees, having no experience in the work of the hive, can transmit nothing different from what they received from their parents, and that "the first bees that ever were must have had just as much ability as the present generation," or, in other words, that all honeybees to-day are exactly the same as the first bees, and that all are exactly alike.

Against any such reasoning, however, stands the very troublesome fact that bees are not by any means alike, and that there is just as much difference among bees as among folks. They differ in temper, in color, in habits, in diligence—in fact, name any difference that may be between two members of the human family, and it is likely that a difference in the same respect may be found among bees. Moreover, that difference is transmitted. Rear queens from the queen of a very cross colony, and you will have cross colonies resulting. So with other traits.

So against the *theory* that a queen cannot transmit, we have the *fact* that she *does* transmit.

Not being a scientist, but only a practical beekeeper, it might seem presumptuous in me to attempt to explain how a parent can transmit something that apparently is possessed only by her children. But there is no law against giving my guess. Take the one matter of temper. A colony may be so irritated by rough treatment or in some other way as to become very cross. Is it beyond belief that the queen may share that same irritable feeling, and transmit it not only to her worker progeny but also to her royal offspring? If that be true, then it may also be true that if any change takes place among the workers, that change may in some subtle way have such an influence upon the queen that a trait acquired by the workers of her colony may be transmitted by her to her royal offspring.

I am inclined to the belief that the first colony of bees was a direct creation, but it can hardly be proven in the manner suggested.

Is any of this of practical importance? Surely—of vast importance to the practical beekeeper. The beekeeper who believes no acquired trait can be transmitted by the queen will make no effort to improve his stock, although, strangely enough, he may thoroughly believe that bees will "run out." The one who believes that the queen can transmit acquired as well as inherited traits, good as well as bad, will be making constant improvement in his bees, and his slogan will be, "Breed from the best."

Marengo, Ill.

C. C. MILLER.

I am not sure that I entirely agree with my good friend Dr. Miller—for instance, in regard to cross bees. A colony that is handled almost every day, and properly handled, will, I feel sure, become so accustomed to it that they take it as a matter of course, and after awhile they will hardly stop work. In fact, the queen will keep right on laying. But take an apiary that

has been neglected, even though it has good movable-comb hives, and if you try to open it without smoke you will have trouble, and perhaps trouble even with smoke. I appeal to beekeepers as to whether I am right or not. And I have been of the opinion that queens do not transmit irritability. At one of our Chautauqua gatherings a speaker of note said that mankind transmits physical qualities but not mental; and he gave some pretty strong facts to support his assertion. Our great inventors and men of great education are frequently from parents who have shown no great mental powers in either direction. He asked us if this was not true. This hits on the old question as to whether it is environment or inherited tendencies that make a man good or bad. We can do very much, and the whole wide world is doing much, to help environment; but we cannot very well help the other *after* people are born.

SHALL THE UNITED STATES INVEST MILLIONS
IN ANTICIPATION OF WAR?

On page 42, January 1, I said I *might* change my mind in regard to the above; but at this date, March 1, I have not changed it, and I have done a great amount of reading in order to keep fully posted. I hope every one of our readers will have a chance to read Henry Ford's articles which he is to have placed in the advertising columns of many periodicals.

We clip below from the *New York Evening Journal*:

The very men who pile up the armament of all nations—and it is true that the same firm will often arm both sides in a conflict—will find an enemy for any country they arm. And they will arm that enemy, too, for the profits on arms are great, and the industry is a monopoly.

We ought to realize that it is the people who not only pay the bills of these munitions makers, but pay the penalty also in the death and misery the use of these arms must bring.

The following from the *New York Times* of February 9, printed prominently by the *Times*, but not conspicuously treated by the great majority of city newspapers, give some idea of the facts:

WASHINGTON, February 8.—Testimony that pleased the pacifist element in the House was furnished to the Committees on Military and Naval Affairs today by General Nelson A. Miles, U. S. A., retired, and Rear Admiral Victor Blue, Chief of the Bureau of Navigation. General Miles said he did not fear an invasion of the United States, and that an invading Admiral Blue declared the navy was now ready to ing army could quickly be driven from the country. meet any enemy it might be called upon to encounter in the Pacific.

I am having this statement printed in the advertising columns of newspapers and magazines throughout the United States. Others will follow. I have no other purpose than to save America from bloodshed and its young men from conscription. I feel that if this militaristic burden is assumed by the country, the United States within ten years will be

in turmoil, its industries paralyzed, and its men, instead of being at work in peaceful industry, will be dying in trenches. And I feel, too, that these men will not be dying to defend their country, as we are now being told, but will perish in the conquest of other men who have a right to live in happiness and peace.

I am hoping and praying that Henry Ford and Billy Sunday may get in touch, and that God may be enabled to use *both* in hastening "the coming of his kingdom."

So good an authority as Prof. Harvey W. Wiley has the following in *Good Housekeeping* for March, in regard to saving life instead of taking it:

Do we really want to live? As I mingle with my fellow-men I begin to doubt it. Our conversation is of war, commerce, society, music, clothes, athletics, Congress, preparedness, taxation, occasionally of books, and once in a long while of life. That which is dearest to us we apparently think least about. Where one man is studying how to prolong life, thousands are seeking means to put a speedy end to it. The advisory committee to the Secretary of the Navy has suggested building a laboratory costing five million dollars, and equipping and manning it, which would probably take about as much more. Its purpose is to study the best methods of killing our fellow-men from other countries, and preventing our own sailors and citizens from being killed. I am not inclined to protest against this action, but merely to ask, What of guarding against disease and preventing the half-million of preventable deaths every year? Who will provide the five million dollars for that? Ten dollars used for prevention will save a life.

God hasten the time when the whole wide world shall discover how much better it is to *preserve* life than to destroy it; and not only physical life, but the kind the dear Savior had in mind when he said, "I am come that they might have life, and that they might have it more abundantly."—JOHN 10:10.

PREPAREDNESS; BRYAN SUGGESTS MILLIONS FOR GOOD ROADS INSTEAD OF MILLIONS FOR MUNITIONS.

The following, clipped from the *Times-Union*, is a part of Bryan's address delivered at Tallahassee, Feb. 29.

Scoring those preparedness advocates who think the country must spend billions upon billions immediately, Mr. Bryan said: "There are two organizations in this country which together claim a monopoly on all the patriotism of the nation. They have taken upon themselves the task of getting the country ready for war. The Security League says, spend three hundred millions a year on the navy and one hundred and fifty millions on the army. The Navy League is older, has more ciphers at its disposal, and had the advantage of making its bid after the bid of the other had been known. It insists that five hundred million is necessary for the army each year, and that a standing army of one million men is an absolute necessity. This program would cost about \$750,000,000 yearly.

"If we are so near war, as the jingoes claim, then let us get ready by preparing our roads. Get them in condition so we can transport our armies from one place to another without delay. It will greatly increase our defensive power by being able to mo-

bilize quickly and transport it rapidly to the point threatened. And there is an advantage about this kind of preparedness; if, after we have prepared ourselves and the war does not come, we shall be able to make good use of the preparation on the work of production. If, however, we divert the money from useful channels and spend it all on battleships and arms and ammunition, we shall have wasted our money if the war does not come; and if it does come, chances are that before it comes changes in warfare will very much reduce the value of preparations in which we have invested.

"We cannot single out a nation and begin to prepare to fight it without cultivating unfriendliness toward that nation, and we cannot make hatred a nation's policy for a generation without having our people anxious to fight as soon as they are ready to fight. If the nations at war had spent in the cultivation of friendship but a small percentage of the amount they have spent in stirring up hatred, there would be no war in Europe today. We should not transplant upon American soil this tree of hatred unless we are prepared to eat of the fruits of the tree, for it has been bearing its bloody fruit throughout the years."

WAR, WHAT IS IT?

Years ago, when I had one of the first automobiles built, down in southern Ohio, while on the road away from any town, my machine suddenly gave out. A thunderstorm was coming on. There was neither time nor place, even if I had the tools, to take the machine to pieces and find the trouble. A heavy peal of thunder reminded me something would have to be done, and that quickly. My little prayer, "Lord, help," welled up of itself. Then I discovered the machine would go backward, even if it would not go forward. By going backward I got into a nearby town and in the shelter of a blacksmith shop just as the big drops began to patter on the roof. There was no repair shop in the town, and the blacksmith said there was only one man in the village who could tackle a disabled automobile, and he had just gathered up his tools and gone down to catch a train to take him back to his home in Columbus. Somebody lent me an umbrella and I caught the man just as he was stepping on the train. He and his brother went back to the blacksmith shop, pulled my machine all to pieces, found the break, and put it in order. You may be sure I thanked the great Father for helping me to get under shelter just in the nick of time, and then again to secure the only competent mechanic just in time—the man who *happened* to be there just by accident.

But what has all of this to do with our present war? Well, just this: It illustrates how important it is to find some one just in the nick of time, a skilled expert, if you choose, in mechanical work, especially for a stranger in a strange land. What a boon to humanity it is to run across ex-

perts, even mechanics! Now try to think how much greater it is to be able to get experienced surgeons and physicians, when the human machine happens to be suddenly marred or thrown out of commission. The Red Cross organization is now trying to place skilled doctors where human beings are torn and lacerated in this wicked war. A little pamphlet comes through the mails entitled "Wounded. By Arnold Bennett," and to give you a better understanding than you have had before of what *war is*, I am going to make some extracts.

The primary object of this war and of all wars is to lacerate human flesh, to break bones, to inflict torture, to paralyze, and to kill. Every army in the field to-day is out for maiming and homicide, and nothing else.

We do not see a thousand prisoners led away in despair, nor a thousand decaying corpses lying in strange, contorted attitudes on the ground, nor eight thousand tortured, bleeding men, whose torn and pierced bodies have in a few moments exuded hogsheads of blood. You protest that I ought not to use such a phrase as "hogsheads of blood"—it sickens you. And why should you not be sickened? Those hogsheads of blood, lacerated limbs, siccaed bones, glazing eyes, screams of pain, are exactly what we all in every country asked for when we voted supplies.

The shrapnel rips, tears, lacerates, and penetrates the human tissues in a horrible manner, and our work consists in repairing and making good as best we can. Our best, alas! is too often of little avail in the face of the anatomic devastation produced. One man, for instance, had his lower jaw shattered to a pulp, and his tongue cloven in two. Another man had his skull smashed, and his brain welling over his face. Another is made completely blind. Another has the front of his abdomen ripped open, and his bowels protrude. Another has a knee joint blown open, a hand smashed, an ankle shattered, and so on and so on. One could multiply and enumerate without end.

The wounded man has suffered a horrible and tragic disappointment, for he, like every soldier, hoped to escape damage; very probably this hope amounted to a belief. He knows that he has done his duty, and the mere fact that he is wounded proves that he has affronted risks. But he knows also that he is useless, for the time being, if not for life. He knows that he is only in the way, a dead weight, a source of possible danger, a drag on the operations. Further, his mind is perhaps perturbed by sudden anxieties about his family. Lastly, he is in great pain, he is acutely enfeebled, and he is helpless. If ever a human being needed comfort, special attention, and the full aid of medical science, apparatus, and highly skilled nursing—if ever a human being needed to feel that he was the center and chief object of all activities in his neighborhood—the wounded man is that human being.

But on the other hand, the army, like the wounded man, knows that the wounded man is useless and a dead weight. The army cannot help wishing that it might be freed of the immense incubus of its wounded.

"At once they rallied and forced us back, and now it was our turn to lose heavily. That was nearly three weeks ago, and since then the ground over which we fought has been debatable ground, lying between our lines and the enemy's lines—a stretch four miles long and half a mile wide that is carpeted with bodies of dead men. They weren't all dead at first. For two days and two nights our men in the earthworks heard the cries of those who

still lived, and the sound of them almost drove them mad. There was no reaching the wounded."

Nobody deserves succor as a wounded man deserves it. His need is a thousand times greater than that of the average person for whose benefit the National Relief Fund was established.

In the last paragraph quoted above, suppose we read it, "is now a thousand times

greater than that of any automobile or any number of automobiles on the face of the earth." Shall we not do all we can to assist the armies or army of the Red Cross, and at the same time stop the foolish and wicked waste of human life caused by the war?

HIGH-PRESSURE GARDENING

SELECTING SEED CORN; A NEW WRINKLE.

For the past two seasons I have gone into the field and selected ears for seed, and placed them near a furnace in the cellar, where they would always be warm and dry. Well, when I tested each ear before planting time *every ear* gave good germination. Right here comes a suggestion from *The Independent Farmer*, Lincoln, Neb. Before you take the time to test each ear, do this: Say you have 100 select ears. Shell four or five grains from each ear, and mix them all up. Now sprout the lot, between dampened cloths (or any other way); and if *every kernel* germinates satisfactorily there is no need of the expensive single-ear test. One who has had practice can, in a field of good corn, select 100 ears with seldom a poor one.

JUST WHAT I HAVE BEEN EXPECTING.

That the boys of a dozen or more years, in our corn clubs, would be teaching their old fathers. See the following clipped from the *Plain Dealer*:

Statistics compiled from the records of the past years show the boys found large profits in their corn contests. The showing is given as illustrating the possible profit to be made from growing corn. On that subject Clark says:

"The average number of bushels raised per acre by the junior corn-growers in 1915 was eighty bushels. The average cost of raising was 25 cents a bushel. If the selling price were 60 cents a bushel, then the \$48 receipts, less the \$20 cost of raising, would be the net profit of \$28 per acre of each acre of corn. The men in Ohio raised an average of 38.8 bushels per acre, and no one knows what their expenses were, neither their losses nor profits."

In some countries *senior* corn contests have been started among the grown men. The contests of the boys have started the men into the game actively.

ROSELLE OR JAMAICA SORREL.

In addition to what I have said about the above, see the following from the *Florida Grower*. Our plants are now (Jan. 24) starting on a second crop.

We call it Florida cranberry. It is far better and far more useful than the cranberry. Some call it "lemonade plant," because it makes a drink similar to lemonade. Another name for it is Jamaica sorrel. But it matters not by what name you know it, I am sure it will become one of the most useful and profitable crops grown in Florida. A friend writes from

California that they often realize \$1000 per acre there for this fruit. I say if they make \$1000 off an acre in California, where they have their water to buy, what ought we not to make here, where conditions every way are so much more favorable? We have 15 plants scattered promiscuously around "Eukalypta Kabin," that came up voluntarily last spring. From these 15 plants we have sold and given away more than fifteen dollars' worth of products; besides, more than half the pods were left for seed, and the third crop is now coming on. The end is not yet. We shall be glad to tell your readers how we come out. We are sufficiently encouraged to try an acre or two this year. Mr. King, the canning man, at Fort Meade, says he will be pleased to contract now for all he can utilize next fall and winter at 12½ cents per pound. Think of it! Another gold-mine about to be discovered! When Florida is discovered, won't it be a great country? When you want the prettiest and best in jelly, jam, marmalade, sauce, pies, drink (better than grape-juice), just try Florida cranberries. "Tastes more."

R. J.

Note.—We have grown "Roselle," made jelly and "lemonade" from it; also used it as cranberry jelly is used with meats, and it is very fine. The only question is in creating a market for it. That done, a profit is assured, for the cost is little.

AN ALIGHTING BOARD MADE OF CLOTH.

I wish to ask your opinion of a new device for an alighting-board—an awning like wire frame covered with various-colored cloth, the cloth a single thickness kept tight by a spring on the under side. The wire frame springs into an adjustable holder on the outside edge of the bottom-board. Advantages? Well, one of the chief ones is the comfort of the laden bee, as she returns weary from her flight. Did you ever observe their hesitation as the dreading to drop on the hard board? Further, this thin cloth would be cooler in the summer and warmer in the winter than the wood. It would not hold puddles of water during rainy weather. Cloth of various colors could be used. The number of the colony could be marked on the cloth.

Mantua, O., Feb. 28.

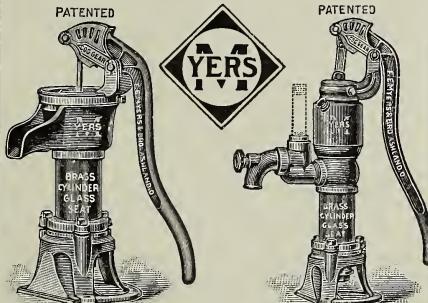
D. B. HUSTED.

Years ago I had a cloth alighting-board; but it flopped about so much when it was windy I was compelled to give it up. The wire springs mentioned in the above would surely fix that. Just this very morning, when the bees were rushing out to work on the orange bloom, there was a puddle of water on the painted alighting-board, caused by the damp breath of the rousing colony, and many bees were soaked and disabled as they tried to get out very early. Will our friend mail us his device, that we may illustrate it?

MYERS House Pumps

Every housewife would be proud of her kitchen if she had a MYERS HOUSE-PUMP. They are handsomely finished and harmonize nicely with the finest surroundings. They are very easy to operate on account of the Patented Cog Gear Head. Ease of operation is an important feature, especially when the pump is much used by women.

We have a beautifully colored circular showing Myers House Pumps in their actual colors, and will send one at your request.



F. E. MYERS & BRO., ASHLAND, OHIO
351 Orange Street

"Orchard Success"

is a small pamphlet of big ideas that you should send for at once. It tells how thoroughly, quickly and cheaply you can rid your orchard of all scale, larvae, eggs and fungi. It describes "scaldice the one great dormant spray," which mixed 1 to 15, is guaranteed to kill every scale it reaches. One barrel equals three barrels of lime sulphur and there is no spray more simple, safe or effective.

Our Free Service Department
is for your special benefit. Question us about any orchard and garden sprays and tools. Our life-time experience is yours for the asking.

Write TODAY.

B. G. PRATT CO., DEPT. 6
50 Church St. N. Y.

3 Garden Tools in 1 The BARKER Weeder, Mulcher and Cultivator

The only garden tool that successfully, in one operation, kills weeds, and forms a complete soil mulch to hold moisture. "Best Weed Killer Ever Used." A boy with a Barker beats ten men with hoes. Has shovels for deeper cultivation. Self-adjusting. Costs little.

SEE THE KNIVES
Write for illustrated folder and special Factory-to-User offer.

Barker Mfg. Co.
Box 117 David City, Nebr.

NEW KEROSENE LIGHT BEATS Electric or Gasoline 10 DAYS FREE SEND NO MONEY CHARGES PREPAID

We don't ask you to pay a cent until you have used this wonderful modern light in your own home ten days—*we even pay transportation charges*. You may return it at our expense if not perfectly satisfied after putting it to every possible test for 10 nights. You can't possibly lose a cent. We want to prove to you that it makes an ordinary oil lamp look like a candle—beats electric, gasoline or acetylene. Lights and is put out like old oil lamp. Tests by Government and 33 leading Universities show it contains 35% more oil and gives off as much light as the best round wick open flame lamp. No odor, smoke or noise; simple, clean, no pressure, won't explode. Several million people already enjoying this powerful, white, steady light, nearest to sunlight. It's GUARANTEED.

Men Make \$50 to \$300 Per Month with Rigs or Autos

delivering the ALADDIN on our easy trial plan. No previous experience necessary. Practically every farm home and small town home will buy after trying. One farmer who had never sold anything in his life before writes: "I sold 51 lamps the first seven days." Another says: "I disposed of 37 lamps out of 31 calls." Thousands who are coining money endors the Aladdin just as strongly. **NO MONEY REQUIRED.** We furnish capital and men to get started. Ask for our distributor's plan, and learn how to make big money in the occupied territory. Send for our **FREE TRIAL** book for full information. We use it in every location and we can refer customers. Be the first and get our special introductory offer under which you get your own lamp **FREE** for showing it to a few neighbors and sending in their orders. Write quick for Address nearest office.

MANTLE LAMP COMPANY, 302 Aladdin Bldg., CHICAGO; NEW YORK CITY; PORTLAND, ORE.; MONTREAL or WINNIPEG, CANADA



Won GOLD MEDAL at World's Exposit'n San Francisco
Lights Entire Room

Largest Kerosene (Coal Oil) Mantle Lamp House in the World

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50 Best Paying Varieties
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Three-band and Golden Italians

The Secret of Success

in beekeeping is to keep your colonies strong. To do this you must have good healthy laying queens.

1 untested queen, \$1.00; 6 for \$5.00; 12 for \$9.00.
1 tested queen, \$1.50; 6 for \$8.00; 12 for \$15.00.
½ lb. bees with untested queen, \$2.50; tested, \$3.00.
1 lb. bees with untested queen, \$3.50; tested, \$4.00.
1-fr. nucleus with untested queen, \$3.00; tested, \$3.50.
2-fr. nucleus with untested queen, \$4.00; tested, \$4.50.
If more frames are wanted than we list, add \$1.00 each per frame wanted to above prices.

Satisfaction guaranteed

W. J. LITTLEFIELD
618 W. Seventh St. Little Rock, Ark.

Yes, "By their fruits ye shall know them," and that is why I have recommended your queens. Where European foul brood is found, the stock proves itself disease-resisting as well as or better than any other we have tested. When a beekeeper having a good apiary where European foul brood was taking the apiary when inspected, and he told me, after testing your queens, he would not take \$25.00 for the last queen you sent him, it speaks for itself. His apiary, now cured, is proof of the pudding.

N. E. France, Plattsburg, Wis.

Queens and Bees Three-banded Italians.

Bred for honey and gentleness.

	1	6	12
Untested	\$.75	\$ 4.25	\$ 8.00
Select Untested . . .	1.00	4.75	9.00
Tested	1.50	8.75	17.00

Breeders, \$3.00 to \$5.00

Bees in 1-lb packages, \$1.25, without queen. If wanted with queen, add price. Perfect satisfaction and safe delivery guaranteed.

N. Forehand, Fort Deposit, Ala.

Italian Queens --- Three-banded

We have bred queens over 25 years, and have hundreds of customers who will testify to the quality of our queens. We haven't any disease among our bees and never had. Our prices are as follows: Untested queens, \$1.00 each; \$10.00 per dozen. Tested, \$1.25 each; \$12.00 per dozen. Select tested, \$2.00 each; \$20.00 per dozen. Breeding queens, \$5.00 each. Special prices on large orders. Our customers must be pleased. Safe arrival guaranteed. Send check with orders to

J. W. Taylor & Son, Beeville, Bee Co., Texas
Prices on nuclei on request.

ITALIAN QUEENS, NORTHERN BRED

are surely most hardy for Canada and northern States. Try one. Untested, \$1.00; select tested, \$1.50. List free. Plans "How to Introduce Queens, and Increase," 25 cts.

E. E. MOTT, Glenwood, Mich.



SQUAB BOOK FREE

Make money breeding PR squabs. 1916 demand biggest ever. Squab book free, telling money-making experiences. How to sell by parcel post. Start small, grow big. Many women customers. Write today. PLYMOUTH ROCK SQUAB CO., 615 HOWARD ST., MELROSE HIGHLANDS, MASSACHUSETTS.

Dr. Miller's Strain of Italians

We have made arrangements with Dr. C. C. Miller to furnish us breeders, and therefore offer you the finest queens reared from the best stock on earth, as Dr. Miller holds the world's record for an apiary of more than 70 colonies having averaged 266 sections weighing 244 pounds. These are not queens bred from a mother that has produced one good yield, but it has been bred in them for generations until their honey-gathering is a fixed quality. In GLEANINGS, p. 788, Editor Root says, "Those queens (Dr. MILLER'S) ought to be worth \$10 to \$25 each."

To inquirers:—I am rearing no queens for sale, but am keeping The Stover Apiaries supplied with breeders from my best stock; and from thence you can obtain the same queens you could get directly from me.

Marengo, Ill., Mar. 1, '16. C. C. Miller.

Virgins, 50 cts.; untested, \$1.50; tested, June, \$2.50. Breeders, August, \$5 to \$10. Bees, our strain, 1 lb., \$1.50; 2 lbs., \$2.50; nuclei, 1-frame, \$1.25; 2-frame, \$2.25; 3-frame, \$3.25; 8-frame colony, \$6.00; 10-frame colony, \$7.00.

Prices do not include queens.

Queens, our strain, 75 cts. each.

Satisfaction guaranteed as well as safe arrival.

200 colonies in 10-frame hives at \$6 each.

Orders filled in rotation; deliveries will be made as promptly as possible after about April 15. One thousand mating nuclei.

The Stover Apiaries, Mayhew, Miss.

Your Honey Crop Depends on Your Interest in Bees

The greater the interest, the greater the crop. Increase your interest by studying what happens in the egg. Here the individual bee begins life.

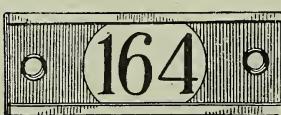
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For tacking on to the hives as an aid to the better control of your bees; very durable, visible and attractive. Approved by large, practical bee-raisers. Circular and samples free.

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Reliable, interesting and instructive—All about the New Everbearers and other important varieties. Address C. N. FLANSBURGH & SON, JACKSON, MICH.

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High-grade Queens Bees by the Pound

Prepare for a Big Crop of Honey by Getting Bees and Queens from

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Three-banded Italian Bees and Queens
Bred for Honey Production

Price List of Swarms of Bees in Packages ready to ship now.

1-lb. swarms, \$1.25; 2-lb. swarms, \$2.35; 3-lb. swarms, \$3.35; 5-lb. swarms, \$5.35.

If queens are wanted, add price as according to price list.

On lots of five packages or more we will prepay express to your address east of the Dakota, Nebraska, Colorado, and Texas lines, and south of the Canadian boundary. This applies only on orders received in April.

Price List of Queens by Return Mail

Untested, 75 cts.; Select Untested, 90 cts.;

Tested, \$1.25; Select Tested, \$1.50.

All queens warranted purely mated.

Wings clipped free of charge.

Our queens are bred from *Select Honey-gathering Stock*, the choice of over 1000 hustling honey-producing colonies that produce about two solid cars of honey annually. All orders for either bees in packages or queens will be filled *promptly* by return mail or express, or as per booking. *There will be absolutely no delay.* We take only as many orders as we can fill and do so *promptly*. Let us have your orders and get your bees on time, or your money back by return mail. Our capacity is 100 1-lb. swarms a day and 6000 queens a year. We have no disease of any kind. Safe arrival and satisfaction we guarantee. Write for prices on wholesale quantities.

M. C. BERRY & CO., Hayneville, Ala.

Successors to Brown & Berry,

Largest shippers of young Italian bees in the South.

Do You Need a Queen for that Queenless Colony?

We can furnish tested Italian queens by *return mail*, \$1.00 each. These queens are not dull nor inferior in any way because they are cheap. They were reared last September and October, and wintered in four-frame nuclei expressly for our early spring trade in tested queens. We expect to have untested queens ready to mail about April 10; \$1.00 for single queen; \$9.00 per dozen. We began rearing queens for sale in 1886. Our strain of three-band Italians is well known to leading beekeepers. We have never had a case of foul brood in our apiary, and we guarantee every queen sent out by us. We solicit your orders.

J. W. K. Shaw & Co., Loreauville, Louisiana

I furnish a full colony of Italian bees in a complete new 8-frame Dovetailed hive for \$10.50; an S-frame chaff hive, \$12.50; a 1 1/2-frame chaff hive, \$14.00. This price includes a tested Italian queen. Catalog of bees and supplies free.

I. J. STRINGHAM, 105 PARK PLACE, N. Y.
Aparies, Glen Cove, L. I.

Archdekin's Fine Italian Queens---3-banded

Prolific, Hardy, Gentle. They are Persistent, Profitable, Producers. None better.

Prices	Before July 1			After July 1		
	1	6	12	1	6	12
Untested	1.00	\$5.00	\$9.00	.75	\$4.00	\$7.00
Tested	1.50	8.00	15.00	1.00	5.50	10.00
Select tested	2.00	10.00	18.00	1.50	8.00	15.00
2-frame nuclei	2.50	14.00	26.00	2.25	12.00	22.00
1-lb. pack. bees	1.50	13.00	25.00	1.25	7.00	13.00
2-lb. pack. bees	2.50	14.50	28.00			

Above prices of nuclei and packages do not include queen. Add price of queen wanted. Satisfaction and safe arrival guaranteed. Absolutely no disease in this country. Get your order in early, and secure prompt delivery. Orders booked if half of amount accompanies order. Queens ready April 15. Nuclei and packages May 1.

J. F. ARCHDEKIN, Bordlonville, Louisiana

Three-band Italian Queens

They are bred from imported mothers.

They are the best for honey-producing purpose; very gentle, and not inclined to swarm. If you buy once you will buy always.

GUARANTEE that all queens will reach you in good condition, to be purely mated, and to give perfect satisfaction.

All orders filled at once.

PRICES --- April 1 to July 1

Untested	one, \$0.75; six, \$4.25; doz., \$8.00
Select Untested90 5.00 9.00
Tested	1.25 7.00 13.00
Select tested	2.00 11.00 20.00

L. L. Forehand, Fort Deposit, Ala.

ITALIAN QUEENS THREE-BANDED



Ready April 1. Of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, and the best of honey-gatherers. Untested, \$1.00; 3, \$2.75; 6, \$5.00; 12, \$9.00. Tested, \$1.25; 6, \$6.50; 12, \$12.50. Send for my free circular and price list, and see the natural conditions under which my queens are raised. Will book orders now.

John G. Miller, Corpus Christi, Texas
723 South Carrizo Street

Italian Queens

with a Record of 30 Years

Leininger's strain of Italian bees and queens have been carefully bred for 30 years; for gentleness and honey-gathering qualities are unexcelled; 95 per cent pure mating guaranteed. Queens ready June 1. Untested, each, \$1.00; 6, \$5.00; tested, \$1.50; 6, \$8.00.

Fred S. Leininger & Son, Delphos, Ohio

Candy for WINTER STORES

Why not be sure your bees have enough for winter by giving each colony one or two plates of candy? We have it in large paper plates weighing about two pounds, enough to last a colony three or four weeks. Can be sent by post. Write for prices, also catalog of supplies.

H. H. Jepson, 182 Friend St., Boston, Mass.

Planet Jr. Seeder and Cultivator



plants and cultivates in half the time

It takes drudgery out of garden work, and gets bigger, better crops besides. Fully guaranteed.

This No. 4 **Planet Jr. Combined Hill and Drill Seeder, Wheel-Hoe, Cultivator and Plow** pays for itself in a single season and lasts a lifetime. Sows all garden seeds (in drills or hills), plows, opens furrows and covers them, hoes and cultivates easily and thoroughly all through the season. 30 other seeders and wheel hoes—various prices.

New 72-page Catalog (184 illustrations) free!

Describes over 70 tools, including 12 entirely new ones, and improvements to our Seeders, Wheel-Hoes, Haws, Orchards, and Beet-Cultivators. Write postal for it today!

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Whether you cultivate the smallest door-yard "patch" or the largest market garden you can't afford to work without a **Planet Jr.**



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A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powdpaint. It comes in the form of a dry powder; and all that is required is cold water to make a paint weather proof, fire proof, sanitary, and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone, or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manufacturer, 58 North St., Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write today.

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Every reader should have a copy. Over 27 years growing the finest Strawberries, raspberries, Blackberries, Currants, Gooseberries, Grapes, etc. All kinds of Fruit Trees, Ornamental Shrubs, Privets, Barberry, Asparagus, Rhubarb, Horseradish, and Farm Seed.

Our Nursery and Farms comprise over 1200 acres in the fertile Miami Valley. Our 40-page catalog is yours for the asking. It is full of just what you want to know about fruit-growing.

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1916 Catalog sent on request

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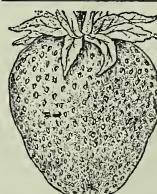
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A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, housewife, etc., need. Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. **Big Profits.** Write for Catalog. **THE BEST LIGHT CO.**

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Tells about planting, pruning, spraying and selling fruit and garden truck.

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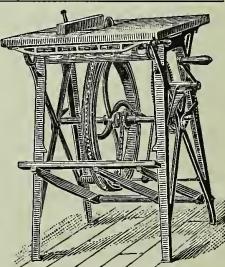
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Hand and Foot Power
Machinery

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial
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WASHINGTON, D. C.

Classified Advertisements

Notices will be inserted in these classified columns for 25 cts. per line. Advertisements intended for this department cannot be less than two lines, and should not exceed five lines, and you must say you want your advertisement in the classified columns or we will not be responsible for errors.

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Clover honey of the finest quality in new 60-lb. cans at 9 cts. per lb. J. P. MOORE, Morgan, Ky.

Choice well-ripened clover honey in 60-lb. cans, quality guaranteed. J. F. MOORE, Tiffin, Ohio.

Fancy extracted clover honey at 9 cts. per lb. Sample 10 cts. JOS. HANKE, Port Washington, Wis.

FOR SALE.—White-clover comb honey; extracted in 60-lb. cans. HENRY HETTEL, Marine, Ill.

A blend of white clover and fall honey, one-third clover. Send 10 cts. for sample. Will be applied on order. FRED BRIGGS, New Sharon, Iowa.

Amber honey, 7½ cts. per lb.; sage honey, 8½ cts. clover honey, 10 cts. per lb. in 60-lb. cans. I. J. STRINGHAM, 105 Park Place, New York.

FOR SALE.—White-clover honey in 60-lb. cans, packed two to the case, now granulated, at 9 cts. per lb. J. E. HARRIS, Morristown, Tenn.

FOR SALE.—50,000 pounds amber honey in 60-lb. cans or friction-top pails. Best quality; prices right; sample. E. S. MILLER, Valparaiso, Ind.

Best flavor alfalfa-sweet-clover honey; 2 60-lb. cans, \$9.50, f. o. b. here; delivered west of Chicago at 9 cts. a pound. WESLEY FOSTER, Boulder, Col.

FOR SALE.—Buckwheat honey at 7 cts. in new 60-lb. cans. C. J. BALDRIDGE, Homestead Farm, Kendalia, N. Y.

FOR SALE.—Water-white alfalfa, white clover, amber alfalfa, and amber fall honey in 60-lb. cans or smaller packages. Amber fall honey is of our own extracting, and can also be furnished in barrels. Write for sample of kind desired, and state quantity you can use. DADANT & SONS, Hamilton, Ill.

RASPBERRY HONEY.—Thoroughly ripened by the bees, very thick, and of fine flavor; in new 60-lb. tin cans, \$6.00 per can. We have a little slightly mixed with buckwheat at \$5.00 per can. Sample of either kind by mail for 10 cts., which may be applied on order for honey. Write for prices on large lots.

ELMER HUTCHINSON, Rt. 2, Lake City, Mich.

FOR SALE.—Medium-brood foundation, 1 to 10 lbs., 52 cts. per lb. Up to 25 lbs., 50 cts. Up to 50 lbs., 48 cts.; 100 lbs., 48 cts. prepaid in La. Root's goods for sale. Beeswax wanted: 26 cts. cash; 27 trade. J. F. ARCHDEKIN, Bordonville, La.

COMB FOUNDATION.—You can have your beeswax made into best quality foundation. Also the wax from old combs or "slumgum." We get it all out. On shares or very cheap for cash; new factory; old liberal terms; cheapest and handiest transportation for all northern beekeepers. You always get your own wax back. J. J. ANGUS,

434 Fulton St., Grand Haven, Mich.

HONEY AND WAX WANTED

Beeswax bought and sold. STROHMEYER & ARPE Co., 139 Franklin St., New York City.

WANTED.—Your own beeswax worked into "Weed Process" foundation at reasonable prices.

SUPERIOR HONEY Co., Ogden, Utah.
"Everything in bee supplies."

FOR SALE

FOR SALE.—Used hives with combs and other supplies. No disease. ARTHUR M. JOHNSON, Poplar, Wis.

FOR SALE.—A full line of Root's goods at Root's prices. A. L. HEALY, Mayaguez, Porto Rico.

FOR SALE.—Circular-saw mandrels, and emery-wheel stands. CHARLES A. HENRY, Eden, N. Y.

HONEY LABELS.—Most attractive designs. Catalog free. EASTERN LABEL Co., Clintonville, Ct.

HONEY LABELS.—New designs. Lowest prices. Catalog free. LIBERTY PUB. CO., Sta. D, Box 4E, Cleveland, O.

Beekeepers, let us send you our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. WHITE MFG. CO., Greenville, Tex.

Good second-hand 60-lb. cans, 25 cts. per case of two cans, f. o. b. Cincinnati. Terms cash. C. H. W. WEBER & Co., Cincinnati, O.

FOR SALE.—Gramm alfalfa and yellow biennial sweet clover, dwarf, grows in all soils and climates. JOHN FREDRICH, Sturgis, S. D.

FOR SALE.—Cedar or pine dovetailed hives, also full line of supplies, including Dadant's foundation. Write for catalog. A. E. BURDICK, Sunnyside, Wash.

FOR SALE.—70 T-tin supers with inside fixtures, used one season; price \$20.00. G. L. ALLEN, Ulster, Pa.

FOR SALE.—Barnes No. 4 foot-power saw in extra fine condition. Write R. E. HAMMOND, Rt. 1, Heath Springs, S. C.

BEE SUPPLIES, all kinds. Low prices. Discount for early orders. Catalog free. WM. ROUSE, Mexico, Mo.

Unhulled yellow-sweet-clover seed, 10 cts. per lb. (biennial); white hulled, 15 cts. R. L. SNODGRASS, Augusta, Kan.

FOR SALE.—Zinc excluders, 75 No. 1; 35 No. 11; a few have been used; 20 per cent off. CHAS. PIPER, De Soto, Ill.

FOR SALE.—Five dovetailed hives and supers, 8 and 10 frame, with drawn worker combs. S. COLLYER, Box 183, Ossining, N. Y.

BEE SUPPLIES.—Write for prices before buying. We can save you money. We make a specialty of special-size hives and frames to order.

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EASTERN MICHIGAN beekeepers especially are invited to send for my catalog of Root's goods and specialties. Try me for satisfactory goods, prices, service. ARTHUR RATTRAY, Almont, Mich.

15,000 4 1/4 x 5 1/4 x 1 1/8 sections and 500 fences for 4 x 5 plain sections for sale or exchange for second-hand motorcycle or anything I can use.

H. A. HARTMAN, Standish, Cal.

Idaho white-clover seed at 35 cts. in 10-lb. lots or more. Tested by state seed inspector; 85.3 white, 14.7 alisake; no obnoxious weeds.

C. E. SHAY, 253 Third St., Frankfort, Ind.

FOR SALE.—Beekeepers' supplies, such as winter cases, hives, sections, covers, bottoms, bodies, supers, brood-frames of every description, shipping-cases, section-holders, comb foundation, smokers, etc. Get my prices before placing your orders.

R. H. SCHMIDT, Rt. 3, Sheboygan, Wis.

FOR SALE.—Half-interest in bee business in one of the best locations in New York State, with as good an equipment as could be asked for. Will accept small payment down, and buy back half-interest any time partner is dissatisfied. Do not write unless you mean business.

M. C. SILSBEE, Rt. 3, Cohocton, N. Y.

FOR SALE.—100 Root 8-fr. comb-honey supers, 4 $\frac{1}{4}$ x 4 $\frac{1}{4}$ plain sections and fences; 100 Heddon wide-frame comb-honey supers, all in excellent condition. Also some bottom-boards and covers, 8-fr., cheap. W. C. LYMAN, Downers Grove, Ill.

FOR SALE.—Friction-top pails, 5-lb. size, per 100, \$4.50; 500, \$21.25; 10-lb. size, per 100, \$6.25; 500, \$30.00. Low prices on other sizes in bulk. Also furnished in reshipping-cases. Shipped from Chicago. A. G. WOODMAN CO., Grand Rapids, Mich.

THE ROOT CANADIAN HOUSE, 185 Wright Ave., Toronto, Ont., successors to the Chas. E. Hopper Co. Full line of Root's goods; also made-in-Canada goods. Extractors and engines; GLEANINGS and other bee-journals; Prairie State incubators. Get the best. Catalog and price list free.

FOR SALE.—At all times, good second-hand empty 5-gallon honey-cans in A-1 condition, packed two in a case, at 25 cts. per case, terms cash, f. o. b. at one of our various factories.

NATIONAL BISCUIT COMPANY (Purchasing Department), 409 West 15th St., New York City.

FOR SALE.—Ideal new concrete bee-cellars, 14x24. Honey-house 14x24; 25 strong colonies; bees in 8-frame Langstroth hives; 2000 bee-feeders; 4-frame Root automatic extractor, uncapping-can; 300 8-frame Langstroth hives, new, and all necessary appliances to operate an apiary for extracted honey. One of the best locations in Michigan. Will sell bees and supplies separate to suit purchaser. Will sell at a bargain. Write to MRS. J. E. HEBERT, Bad Axe, Mich.

SECTIONS \$2.85 PER THOUSAND.—*The Beekeepers' Review* is making a lead on sections, and furnish their subscribers with *any make you prefer* at from \$2.85 to \$4.50 per M. Order the same make of section as usual, but do not send us but \$4.50 per M. for the No. 1 grade, and 50 cts. less for the No. 2 grade. One maker can be furnished as low as \$2.85 per M. for the No. 2 plain. *Do not buy a single supply* for the bees without first investigating our co-operative plan of buying. Write your wants to *The Beekeepers' Review*, Northstar, Mich.

PATENTS

PATENTS THAT PAY: \$600, \$12.00 clients made. Protect your idea! Send data. Advice and two wonderful Guide Books free. Highest reference. E. E. VROOMAN & Co., 834 F., Washington, D. C.

POULTRY

Some farmers in this locality have pure-bred eggs; 50 cts. for 15. Write FRED SALZMAN, Bedford, Ill.

BABY CHICKS. Wycoff, and a few of Barrow's choicest. Prices reasonable. LINESVILLE PULLET HATCHERY, Linesville, Pa.

White Indian Runners and Mammoth White Pekin ducks, range breed, show stock, and prize-winners. Eggs for hatching, \$2.00 for 13; \$4.00 for 30. E. B. BROWN, Box 323, White Plains, N. Y.

Eggs for hatching from the finest thoroughbred S. C. White Leghorns in America. Bred for egg production and fertility; safe arrival guaranteed. GILBERT S. HORTON, Tuxedo, N. Y.

\$\$\$\$ IN PIGEONS! Start raising squabs for market or breeding purposes. Make big profits with our Jumbo pigeons. We teach you. Large, free, illustrated, instructive circulars.

PROVIDENCE SQUAB CO., Providence, R. I.

FOR SALE.—Winter-laying White Wyandottes 200-egg strain, built up after years of careful selection and breeding from famous prize-winning stock. Setting eggs, \$1.05 to \$5.00 for 15, according to pen. Day-old chicks, in lots of ten or more, 25 cts. each. Place orders now for early delivery. C. E. BLANCHARD, Youngstown, Ohio.

WANTS AND EXCHANGES

TO EXCHANGE.—4 x 5 shipping-cases and 4 x 5 sections for honey. CHAS. Y. HAKE, York, Pa.

TO EXCHANGE OR SELL.—Superb, the best fall-bearing strawberry-plant, for bees or doetailed hives. F. W. BROOKE, Ithaca, Mich.

U. S. patent on Hurst reversible brood-chamber for comb-honey production to trade for bees. CHAS. HURST, Allanburg, Ont.

To exchange for honey, 5 new-bound volumes I. C. S. Architectural, cost \$25.00. Make me an offer. LOUIS STOKE, JR., Box 2360, Louisville, Ky.

Will exchange golden and silver pheasants for honey, maple syrup, bees, and supplies. S. WHANN, Polk, Pa.

WANTED TO CONTRACT.—White sage bulk comb honey in carload lots only. Correspondence solicited. W. J. OATES, Los Flores Apiaries, Lompoc, Cal.

Bees wanted within fifty miles St. Albans or Montreal. Myself pack and move them. F. ALLEN, Philipsburg, Quebec, Canada.

260-egg \$48.00 incubator, to exchange for Barnes saw, honey-extractor, Winchester shotgun, or offers. LORENZO CLARK, Winona, Minn.

AUTOMOBILE.—20-horse-power roadster, just overhauled, new piston rings and new gears, to exchange for bees. Care of THE A. I. ROOT CO., 915 Walnut St., Des Moines, Iowa.

WANTED.—To furnish every beekeeper within 500 miles of Boise, Idaho, with the best and cheapest bee supplies on the market, *quality considered*. Send me your order or a list of your requirements for 1916. Our catalog and price list will be mailed to you free. Order early and get the discounts. C. E. SHRIVER, Boise, Idaho.

REAL ESTATE

FOR SALE.—Farm of 13 acres; 200 hives of bees, mostly double-walled; Hoffman frames; run for comb and extracted; in one of the best locations of Schoharie Co. For further particulars address owner.

E. J. DIENST, Gilboa, N. Y.

Twenty acres in San Joaquin Valley, California, in fruits, vegetables, alfalfa with cows, pigs, poultry, and bees will pay you steady, substantial profits. Delightful climate, rich soil, good schools, churches, fine roads. Thrifty, hospitable neighbors. Write for free books. C. L. SFAGRAVES, General Colonization Agent, A.T.&S.E. Ry., 1927 R'y Exchange, Chicago.

VIRGINIA AND NORTH CAROLINA FARMS, \$15.00 per acre and up. Easy payments. Fruit, Dairy, Stock. Mild Climate. Raise Spring Lambs for early market. On Railroad. Best markets near by. Write for farm lists, information, and N. & W. Rwy. Homeseeker, all free. F. H. LABAUME, Agr'l Agt. Norfolk & Western Ry., 246 N. & W. Bldg., Roanoke, Va.

MISCELLANEOUS

Vegetable Peaches, Powell Beans, Potato Seed, 10 cts. each. Any 3, 20 cts.

A. T. COOK, Hyde Park, N. Y.

SEED CORN.—Highest germination; best varieties other farm seed; 1200 acres; 40-page catalog.

W. N. SCARFF, New Carlisle, Ohio.

Seed Oats and Potatoes. Pedigreed 7009, 60-day oats. Very early. Heavy yielding. \$1 per bu.; 10 bu., 75c. Hill selected Sir Walter Raleigh potatoes, \$1.50 per bu.; 10 bu., \$1.35; 25 bu., \$1.25, f. o. b. Medina. Sacks free. ABBOTT & BAIRD, Medina, O.

CHEESE.—Swiss, 5 pounds, \$1.40; brick, 5 1/2 pounds, \$1.15; American, 5 pounds, \$1.15; Limburger, 4 pounds, 85 cts. Ask your postmaster what the postage is on 6 pounds to your city, and add postage to the above amount, and get some real cheese.

E. B. ROSA, Monroe, Wis.

BEES AND QUEENS

Finest Italian queens. Send for booklet and price list. JAY SMITH, 1159 DeWolf St., Vincennes, Ind.

Three-band Italian queens, \$1.00 each; \$9.00 a doz. EDITH M. PHELPS, Binghamton, East End, N. Y.

FOR SALE.—Well-wintered bees. Hoffman's wired frames. JULIUS GENTZ, Wabeno, Wis.

Italian queen-bees, \$1.00 each; tested, \$1.50. J. B. CASE, Port Orange, Fla.

FOR SALE.—20 strong healthy colonies of bees. T. O'DONNELL, JR., 815 S. Kildare Av., Chicago, Ill.

FOR SALE.—140 colonies well-kept bees, on good alfalfa locations; also 50 extra hives. FRED FREISE, Los Banos, Cal.

FOR SALE.—600 colonies well-kept bees. All modern equipment. Write WM. CRAVENS, Rt. 7, San Antonio, Texas.

Mt. Hamilton Apiary. Italian Queens. Untested, 75 cts.; tested, \$1.50 and up. CHAS. WOEHL, 360 N. Lincoln Ave., San Jose, Cal.

FOR SALE.—We offer to some one in this or a near-by state, 50 to 300 colonies, 8-frame, first class. THE E. F. ATWATER CO., Meridian, Idaho.

Three-band vigorous Italian queens, "Mendelian" bred. Untested, \$1.00; tested, \$1.50; breeders, \$5.00 and \$10.00. CHAS. W. QUINN, Fort Myers, Fla.

Doolittle and Clark Breeding Queens ready for delivery May 1. Prices, \$10, \$5, \$2.50. Untested queens in June. Marietta, N. Y.

FOR SALE.—Fine opportunity for beginner. Strong colony of bees, extra hive, and other supplies. Italian strain. Make best offer.

RUDOLPH AEBERLE, Ridgewood, N. J.

H. C. Short, queen-breeder, formerly of Winchester, O., is now with W. D. Achord, Fitzpatrick, Ala. We will appreciate the patronage of Mr. Short's customers.

Golden Italian queens about May 1. Select tested, \$1.25; tested, \$1.00; untested, 70 cts.; dozen, \$8.00; select untested, 80 cts.; dozen, \$9.00. No foul brood. D. T. GASTER, Rt. 2, Randleman, N. C.

Order queens now for March and April delivery. Three-band Italians, the business bee; untested queens, \$1.00 each, fully guaranteed; no disease. M. F. PERRY, Bradenton, Fla.

Ready now, best Italian bees, 1 lb., \$1.00; untested queen, 65 cts.; two-frame nucleus with queen, \$2.25. J. B. MARSHALL, Rosedale Apiaries, Big Bend, La.

QUEENS OF QUALITY.—The genuine "quality" kind of dark Italians, bred for business. Guaranteed to please or your money back. Circular free. J. I. BANKS, Lowelltown, Tenn.

Carniolan, golden, and three-band Italian queens. Tested, \$1.00; untested, 75 cts.; 6, \$4.20; 12, \$7.80. 1/2-lb. bees, 75 cts.; 1 lb., \$1.25; nuclei, per frame, \$1.25. No disease; everything guaranteed. Write for price list. C. B. BANKSTON, Buffalo, Leon Co., Tex.

FOR SALE.—Three-band Italian queens. Nuclei a specialty. Bees by the pound. My stock will please you as it has others. Let me book your order for spring delivery. Write for circular and price list. J. L. LEATH, Corinth, Miss.

FOR SALE.—Young laying queens, ready to mail, 1 to 100, 60 cts. each. Clean bill of health; 33 years' experience among bees. B. J. COLE, Fertilla, Cal.

Golden and three-banded Italians. Untested, 85 cts.; tested, \$1.25. Bees in packages, \$1.25 per lb. Satisfaction guaranteed.

D. L. DUTCHER, Bennington, Mich.

FOR SALE.—Six colonies Italians in 10-frame double-walled Buckeye or Protection hives; without supers. Root queens; \$60 for the lot, or \$12 each. J. F. ULRICH, Rutherford, N. J.

Three-banded Italians, ready May and June, \$1.00 each; 6 for \$5.00; 12 for \$9.00; after June 75 cts. each; 6 for \$4.25; 12 for \$8.00. For larger lots write CURD WALKER, Jellico, Tenn.

FOR SALE.—Golden Italian queens that produce golden bees; for gentleness and honey-gathering they are equal to any. Every queen guaranteed. Price \$1; 6 for \$5. WM. S. BARNETT, Barnetts, Va.

FOR SALE.—25 colonies of Italian bees, frames wired, combs built on full sheets of foundation; 8-fr. colonies, \$5; 10-fr., \$6, with queen. HENRY SHAFFER, 2860 Harrison Ave., Cincinnati, O.

Golden California Goldens, 60 cts. each. We sell cheap, as we manufacture all of our own supplies. ALAMEDA APIARIES, 1042 Alameda Ave., San Jose, Cal. W. A. BARSTOW, Breeder.

FOR SALE.—Good Italian queens, untested, 75 cts.; tested, \$1.00; nuclei, 2 frames, \$3.00; 1-lb. package, \$2.00; 2-lb. package, \$3.00, with untested queen. Will be ready to send out about April 1. G. W. MOON, 1904 Park Ave., Little Rock, Ark.

FOR SALE.—Italian bees, 1 lb. with queen, \$2.25; 1 frame with queen, \$2.00. Queens, 75 cts. each. Safe delivery guaranteed; 30-page catalog with beginners' outfit for stamp. THE DERON TAYLOR CO., Newark, N. Y. (formerly Lyons).

My bright Italian queens will be ready to ship April 1, at 60 cts. each; virgin queens, 30 cts. Send for price list of queens, bees by the pound, and nucleus. Safe arrival and satisfaction guaranteed.

M. BATES, Rt. 4, Greenville, Ala.

Golden Italian queens that produce golden bees; the highest kind, gentle, and as good honey-gatherers as can be found; each, \$1.00; 6, \$5.00; tested, \$2.00; breeders, \$5.00 to \$10.00.

J. B. BROCKWELL, Barnetts, Va.

FOR SALE.—In order to make room for early cells we are offering select tested queens for \$1.00 each if taken by April 15. These are young queens, reared late last fall.

M. C. BERRY & CO., Hayneville, Ala.

Indianola Apiary offers bees and queens for sale for 1916 as follows: Tested queens, \$1.25; untested, 75 cts.; 1 lb. of bees, \$1.00; one-frame nucleus, \$1.25. Add price of queen if wanted.

J. W. SHERMAN, Valdosta, Ga.

See our large ad. elsewhere in GLEANINGS. We prepay express on lots of 5 or more packages of bees with queens going to points east of the Dakota, Nebraska, Colorado, and Texas lines, and south of the Canadian boundary. Prompt delivery guaranteed.

M. C. BERRY & CO., Hayneville, Ala.

FOR SALE.—Early delivery of three-band Italian queens, pure mating, I guarantee. Any number for only 75 cts. each. These are bred from the best stock and by the best methods. No disease. We are better prepared than ever before to fill orders promptly.

W. D. ACHORD, Fitzpatrick, Ala.

A daughter of one of Dr. Miller's best honey queens, and the Beekeepers' Review for 1916 for only \$2.00. A daughter of one of the very best honey-getting queens selected from 1100 colonies worked for extracted honey, from the yards of E. D. Townsend & Sons, and the Review for 1916 for only \$1.75. The queens will be mailed in June direct from our breeders in the South. A rare buy.

Now booking orders for three-frame nuclei Italian bees and tested queen; delivery June 1, \$4 each. Low freight, quick delivery, satisfaction.

S. G. CROCKER, JR., Roland Park, Md.

FOR SALE.—Bees in pkgs.: 2-lb. swarm, \$1.75; 3-lb. swarm, \$2.50. Untested Italian queens, 75 cts. each or \$8.00 per doz. Bees are free from disease, and we guarantee safe delivery.

IRISH & GRESSMAN, Jesup, Ga.

FOR SALE.—Northern-Ontario-Bee-Diseaseless District Bees. Hardiest, healthiest. Prices will suit you. Write now to B. F. JOHNSON, 7901 Franklin Ave., Cleveland, O.; after April 1 to RAHN BEE AND HONEY CO., Haileybury, Ont.

GRAY CAUCASIANS.—Early breeders, great honey-gatherers; cap beautifully white; great comb-builders; very prolific; gentle; hardy; good winterers. Untested, \$1; select untested, \$1.25; tested, \$1.50; select tested, \$2.00. H. W. FULMER, Andalusia, Pa.

We want to tell you about our bees, quote our prices on queens and bees by the pound, and let you know the express rate from Brady to your station. Let us hear from you.

R. V. & M. C. STEARNS, Brady, Tex.

Three-banded Italians, ready after June 15. Will book your orders now with 10 per cent cash down. Queens, untested, 75 cts. each; \$8 per doz. Nuclei, 1-fr., \$1.50; 2-fr., \$2.25; 3-fr., \$3.00. Full colonies, \$7.00 each.

EGGERS APIARIES CO.,

Rt. 1, Eau Claire, Wis.

FOR SALE.—400 colonies Moore strain bees in good location. Combs built on full sheets of foundation. Everything in first-class shape. Principal source of honey is alfalfa. Located in the Rio Grande Valley, under the largest irrigation project in the United States.

THE CROWN APIARIES, Mesilla Park, N. M.

Carniolan, Golden, and three-banded Italian queens. Tested, \$1.00 each; 6, \$5.40; untested, 75 cts. each; 6, \$4.20. Bees, 1 lb., \$1.25; 2 lbs., \$2.25. Nuclei, per frame, \$1.25; two-frame, \$2.25; eight-frame hive, \$6.50; ten-frame hive, \$7.00. Write for price on large orders. Everything guaranteed to reach you in good order. No disease here. Cash must accompany your order. Please mention GLEANINGS. I. N. BANKSTON, box 135, Buffalo, Tex.

QUEENS.—Italians exclusively; golden or leather-colored. One select, untested, \$1.00; 6, \$4.25; 12, \$8.00. Tested, \$1.25. Best breeder, \$5.00. Early swarms of young bees in light screen cage a specialty. One 1-lb. package, \$1.25; one 2-lb., \$2.25; queen extra. For ten or more, write for price. Also nuclei and full colonies. I am booking orders now, with 10 per cent deposit for delivery March 15 and after. Safe arrival, prompt service, and satisfaction guaranteed. Circular free.

J. E. WING, 155 Schiele Ave., San Jose, Cal.

The Beekeepers' Review, Northstar, Michigan, are buying combless bees in pound packages, with young untested queens in large quantities. By so doing they are getting inside prices, and they are giving their subscribers all the benefit of this close buy. Listen: Ten pound packages with queens for only \$16.00; 20 packages for only \$31.00. If you want two pound packages instead of the one, add 95 cts. to each package. They are shipped from the gulf states by express, direct to the purchaser.

FOR SALE.—Swarms of Italian bees in packages, 1 lb. of bees, \$1.50; 2 lbs. of bees, \$2.50; for 50 or more they are 12½ cts. less. Untested Italian queens, 75 cts. each; tested Italian queens, \$1.25 each. No reduction on quantity of queens for April and May. Quality, service, safe delivery, and no disease, I guarantee. We spare no labor nor money to produce the best for you is why we cannot make a lower price. Early swarms get the honey. We can deliver the goods with pleasure to both of us.

W. D. ACHORD, Fitzpatrick, Ala.

The successful package-shipper and queen-breeder.

Phelps' Golden Italian Queens combine the qualities you want. They are great honey-gatherers, beautiful and gentle. Mated, \$1.00; six, \$5.00; tested, \$3.00; breeders, \$5.00 and \$10.00. C. W. PHELPS & SON, Wilcox St., Binghamton, N. Y.

BEES AND QUEENS.—Doolittle's Italian stock speaks for itself. They are gentle, resist disease, and are fine honey-gatherers. We breed this stock only, and guarantee delivery only to points west of the Rocky Mountains. Untested queens, 75 cts. each; \$8.00 per dozen; \$60 per 100; tested queens, \$1.25 each; \$12 per dozen; \$85 per 100. Three-frame nuclei, \$2.25 each; \$200 per 100. Bees, ½-lb. packages, 75 cts. each; \$6.00 per 100; 1-lb. packages, \$1.00 each; \$85 per 100. Add price of queens to above packages. Complete catalog free on application. SPENCER APIARIES, Nordhoff, Cal.

FOR SALE.—Three-banded Italian bees. Three-frame nuclei, with queen, \$3.00; without queen, \$2.25. We have more bees than we can manage, and can, therefore, supply you with the biggest and strongest nuclei you will be able to find anywhere. Send your order now, and money when you want them shipped. Can begin shipping April 15, or earlier, if necessary. Bees are all on standard Hoffman frames, and combs are all built on full sheets of foundation and wired frames. We guarantee bees to be free from disease.

THE HYDE BEE CO., Floresville, Tex.

HELP WANTED

WANTED.—Man to take charge of apiary, 200 hives, and assist in orchard work.

HAWTHORNE FARMS CO., Barrington, Ill.

WANTED.—Expert beeman to help in business of 1100 colonies. Work starts April 15. Good wages.

EARL HANKS, Hageman, Ida.

WANTED.—Young man with some experience in handling bees, to assist in large apiary, garden, etc.; married man preferred. Please give full particulars in first letter. W. D. WRIGHT, Altamont, N. Y.

WANTED.—Can take two clean minded and bodied young men as student help for the season of 1916. Board free for help given, and something more if a good season and help does well. One understanding an auto preferred. Address R. F. HOLTERMANN, Brantford, Ontario, Canada.

WANTED.—Robust western young man, of good habits, honest and industrious, at moderate wages and board, who has had some experience handling bees for extracted honey. State your case fully, give references, and wages expected in first letter.

IRA C. FARNEY, Mesilla Park, N. M.

WANTED.—Young man with a little experience; fast willing worker—a student helper in our large bee business of over 1000 colonies; crop last year over 105,000 lbs. Will give results of our long experience, and small wages; every chance to learn. Give age, height, weight, experience, and wages, all in first letter, or expect no answer.

E. F. ATWATER, Meridian, Idaho.

SITUATIONS WANTED

WANTED.—Position in beeyard. I have a diploma and 5 years' experience. Good references; apply at once.

JAMES A. MAINES, Niles, N. C.

WANTED.—Young man having ten years' experience with bees wants position with extensive bee-keeper to learn more thoroughly the business. Please state wages and all particulars.

L. E. TURNER, Montrose, Minn.

BEEKEEPERS' DIRECTORY

Well-bred bees and queens. Hives and supplies.
J. H. M. COOK, 70 Cortlandt St., New York.

Nutmeg Italian queens, leather color, \$1.00; 12
for \$10.00, return mail.

A. W. YATES, 3 Chapman St., Hartford, Ct.

QUIRIN'S superior northern-bred Italian bees and
queens are hardy, and will please you. More than
twenty years a breeder. Orders booked now. Free
circular. H. G. QUIRIN, Bellevue, Ohio.

QUEENS.—Improved three-banded Italians bred
for business, June 1 to Nov. 15, untested queens, 75
cts. each; dozen, \$8.00; select, \$1.00 each; dozen,
\$10.00; tested queens, \$1.25 each; dozen, \$12.00.
Safe arrival and satisfaction guaranteed.

H. C. CLEMONS, Boyd, Ky.

TRADE NOTES

HONEY-EXTRACTORS.

If you contemplate buying a honey-extractor, better
get your order in without delay or you are likely
to pay more money for it. Most of the metal
parts entering into its construction have doubled, or
nearly doubled, in value during the past few months,
and a new scale of prices will be in effect before
very long.

BUCKWHEAT SEED.

We have a moderate supply of buckwheat seed,
both Japanese and silverhull, which we offer while
it lasts at \$1.50 per bushel; two-bushel bag for
\$2.75; no charge for bag. If intending to sow, send
in your order while the seed is available.

ALSIKE CLOVER SEED.

We still have a number of bushels of alsike clover
seed, which we offer, subject to previous sale, at
\$10.00 per bushel, with 25 cts. extra for bag to
ship in. Any quantity from a peck up at this rate.
Lot of two bushels or over, no extra for bags. It
will not last long at this price. If you want some,
better order promptly.

SWEET-CLOVER SEED.

We have a good supply of very choice hulled
white-sweet-clover seed scarified for quick germination,
requiring only 10 lbs. per acre for a good
stand. We offer this for a short time to reduce
stock at \$18.00 per 100 lbs. Now is the right time
for sowing with a nurse crop to produce hay or
bloom with seed next year. We have also choice
hulled yellow which we will sell at \$15.00 per 100
lbs.

ADVANCING PRICES.

The upward movement in prices of materials has
become so marked in many lines that we are com-
pelled to figure out advanced prices on finished prod-
ucts, especially in metal goods, and new prices will
be announced in the near future. To replace mate-
rial on hand at present market prices would make
the cost of the finished article so high that we should
be unable to sell at the prices which have been in
effect except at a loss in numerous cases. The best
authorities on the situation maintain that, even if
the great war closed now or in the near future, it
will be several years before production overtakes
demand for steel products, and that we must expect
a period of several years of higher values.

A POSSIBLE SHORTAGE OF SECTIONS.

Two factories which formerly made sections, hives,
and supplies generally, have been closed during the
past few months by going into bankruptcy. The
factories which remain will have their own trade to
supply, and in addition will have to make up for the
shortage caused by the closing of the two now idle.
A recent investigation discloses the fact that there is
a shortage of dry white basswood suitable for mak-
ing one-piece sections, and the color of many turned

out during the next few weeks will be below the
average. Stocks of manufactured sections are below
normal for this time of year; and if the season
turns out well there is prospect for a short supply.
New lumber cut the past winter is usually not dry
enough for use till late in May.

COMB-HONEY CARTONS ADVANCED.

Owing to a big advance in white-coated boxboard
we are under the necessity of advancing the price
of comb-honey cartons as listed in our catalog, both
printed and plain, both styles, 75 cts. per 1000 re-
tail, wholesale, and jobbing prices. This advance
represents simply the increase in cost of stock at
today's market price. Paper-makers are in a bad
way for materials. This issue of GLEANINGS is de-
layed in mailing because a car of paper ordered in
January for delivery by March 10 did not arrive till
March 29, which delayed the printing about a week.
The label catalogs we are now mailing quote ad-
vanced prices on most styles as well as on stationery
and other printing. We are working out some new
designs in labels to be included in a new edition
of the label catalog in preparation.

COMB VS. EXTRACTED HONEY.

For several years previous to 1915 there seemed
to be a shortage of choice comb honey and a plen-
tiful supply of extracted. Market conditions at this
time seem to indicate an oversupply of comb honey,
whereas the available supply of extracted is being
pretty well picked up, and there is not likely to be
much left when the new crop is ready for market.

Well-ripened extracted honey does not deteriorate
with age, and is just as available for use a year or
two after production as it is during the first year.
Because of the liability to granulate, it is not so
easy to carry over comb honey. It is important,
therefore, that there be no overproduction of comb
honey if a steady market be maintained at a remu-
nerative price. When comb honey granulates before
it is used up its market value is reduced 50 to 100
per cent; and the one who owns it during the pro-
cess of granulation is bound to lose money, and may
also lose interest in handling an article subject to
such deterioration. There ought to be some reliable
method of regulating the relative production of comb
and extracted so as to prevent an oversupply of
comb. If in doubt, better produce extracted rather
than comb. The consumption of extracted honey is
on the increase, and we believe it will increase
relatively faster than that of comb honey. If there
should be an oversupply of extracted, and you store
it well ripened, you can feel safe that it will not
deteriorate, no matter what temperature it may be
subjected to; whereas with comb honey if you can
not dispose of it you must keep it in a warm even
temperature to prevent granulation, and even then
you may not succeed.

SECOND-HAND FOUNDATION MILLS.

We have to offer the following list of foundation
machines which have been used but are in fair con-
dition. In many cases they will answer as well as
a new machine where you have only a moderate
output. Send for sample of foundation from any
mill in the list which may interest you.

No. 0153, 2 1/2 x 6 hexagonal thin-super mill in
very good condition. Price \$14.00.

No. 0156, 2 1/2 x 6 hexagonal extra thin-super mill
in fair condition. Price \$10.00.

No. 0165, 2 1/2 x 6 hexagonal extra thin-super mill
in fair condition. Price \$10.00.

No. 0183, 2 1/2 x 6 hexagonal thin-super mill in
very good condition. Price \$14.00.

No. 0214, 2 1/2 x 10 hexagonal light-brood mill in
poor condition; rolls quite badly pitted; will make
fair foundation. Price \$13.00.

No. 0230, 2 1/2 x 10 hexagonal medium-brood mill
in fair condition. Price \$18.00.

No. 0231, 2 1/2 x 10 hexagonal medium-brood mill
in fairly good condition. Price \$20.00.

No. 0233, 2 1/2 x 10 hexagonal medium-brood mill
in poor condition; cells bruised. Price \$14.00.

No. 0234, 2 1/2 x 6 extra-thin-super mill in very
good condition. Price \$12.00.

No. 0235, 2 1/2 x 10 hexagonal light-brood mill in
good condition. Price \$22.00.

No. 0237, 2 1/2 x 6 thin-super mill in fair condi-
tion. Price \$10.00.

No. 0238, $2\frac{1}{2}$ x 6 thin-super mill in fair condition. Price \$10.00.
 No. 0239, $2\frac{1}{2}$ x 10 medium-brood mill, hexagonal cell, in fair condition. Price \$18.00.
 No. 0241, $2\frac{1}{2}$ x 10 hexagonal medium-brood mill in good condition. Price \$20.00.
 No. 0242, $2\frac{1}{2}$ x 10 hexagonal medium-brood mill in good condition. Price \$20.00.
 No. 0243, $2\frac{1}{2}$ x 10 hexagonal medium-brood mill in good condition. Price \$20.00.
 No. 0244, $2\frac{1}{2}$ x 10 round-cell medium-brood mill in good condition. Price \$14.00.
 No. 0245, $2\frac{1}{2}$ x 10 hexagonal medium-brood mill in very good condition. Price \$18.00.
 No. 0246, $2\frac{1}{2}$ x 10 hexagonal medium-brood mill in good condition. Price \$20.00.

THE A. I. ROOT CO., MEDINA, O.

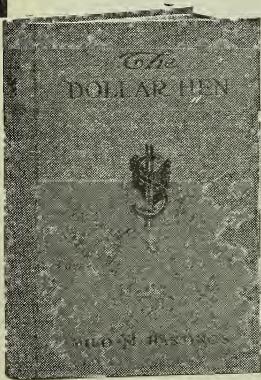
BILLY SUNDAY AND THE SALOON CROWD.

We clip the following (from Ridgway) in the "Busy Men's Corner" of the *Sunday School Times*:

Only this very day I have read an intemperate attack by a minister upon Billy Sunday—to the great joy of every saloon man in the town. This very same paper prints a list of saloons that have just lost their licenses thru this same Billy Sunday's stirring and searching evangelism. This Pennsylvania Pharisee would undoubtedly have heaved his rock at Stephen as joyfully as he stabs his pen into Billy. Billy Sunday draws thousands to strike the sawdust trail. These stone-throwing critics draw little beyond their salaries (Rev. 3:14-18). As I write we are busy fighting rum here in Pennsylvania. The saloon-keepers give us no anxiety. They are in front of us fighting their best. But our "good Christian temperance friends" give us our wounds. In fact, the saloon crowd is printing sermons by "Christian ministers" defending their cause.

The Dollar Hen

My opinion is that "The Dollar Hen" is not only one of the best books on poultry that we have at the present time, but it is worth nearly as much as a dozen other books. Perhaps this is extreme, but we have very few books that are strictly up to date, and still fewer that pitch right into the superstitions and humbugs scattered thru all our poultry books and journals.—A. I. Root.



This book will be clubbed with GLEANINGS for one year at \$1.35; or, if you have already subscribed a year or more in advance you can have the book for 60 cents.

GLEANINGS
IN
BEE
CULTURE,
Medina,
Ohio

Be Efficient in BEE CULTURE

Grasp the experience of others in beekeeping by reading the best that has been published. The pamphlets and books listed below compel interest. Place a X in the margin opposite the publication you want.

THE DEVELOPMENT OF THE APPLE FROM THE FLOWER. By O. M. Osborne. Here's the latest scientific information about why apple blossoms can not do without bees. Free.

MY FIRST SEASON'S EXPERIENCE WITH THE HONEYBEE. By "The Spectator," of the *Outlook*. A leaflet humorously detailing the satisfaction of beekeeping. Free.

CATALOG OF BEEKEEPERS' SUPPLIES. Our new complete catalog mailed free to any address on request.

THE BEEKEEPER AND FRUIT-GROWER. Do you know that bees are necessary in modern fruit culture? This 15-page booklet tells how beekeeping is doubly profitable to the fruit-grower. Free.

SPRING MANAGEMENT OF BEES. The experience of some successful beekeepers on solving this perplexing problem. Price 10 cents.

THE USE OF HONEY IN COOKING. Just the thing for the up-to-date housewife. Price 10 cents.

BEES AND POULTRY, how they work together profitably for others—why not for you? Some valuable pointers on hens and honeybees. Free.

HOW TO KEEP BEES. A book of 228 pages detailing in a most interesting manner the experiences of a beginner in such a way as to help other beginners. Price \$1.00 postpaid.

THE A B C OF BEE CULTURE. A standard encyclopedia on bees. The largest and most complete published anywhere. 712 pages, fully illustrated. \$2.00 postpaid.

WINTERING BEES. A digest of all the information on the subject. Thoroughly modern and practical. Price 10 cents.

THE BUCKEYE HIVE, or the management of bees in double-walled hives. Will interest the amateur especially. Illustrated. Price 10 cents.

SWEET CLOVER, the all-around forage crop. Just off the press. Investigate this astonishing plant. Free.

ADVANCED BEE CULTURE. A summary of the best ideas of experts in apiculture. The book is beautifully printed and bound. 205 pages. Cloth. \$1.00 postpaid.

Be sure that the following coupon is carefully filled out.

The A. I. Root Company, Medina, Ohio.
Please send me the items checked above.

I enclose \$..... to cover the cost.

Name

Street Address or R. F. D.....

Town

State.....

The Eyes, Ears, and Mouth are Near Together

To see birds, hear their music, and taste honey are a happy trio.

There is a new and enlarged
Bird Department
in the
Guide to Nature

Send twenty-five cents for a four-months' trial subscription

Address: ARCADIA, Sound Beach, Conn.

"Next Door to Everything"

Reads the advertisement of a great railway terminal, "Next door to everything in Bedoom" fittingly describes our location. In the bee-supply business distance is measured, not in miles but in hours and minutes; and the house that gives first service is nearest the beekeeper.

Tho but a short distance from the geographical center of Ohio we are yet so near to West Virginia and Pennsylvania, and so closely connected by transportation lines, that we are truly "next door."

Some idea of our importance as a distributing center may be gained from the fact that more than fifty mails arrive and as many depart daily, and almost a hundred freight and express trains enter and leave the city every twenty-four hours.

Then our location in the city is most accessible. Our office and warerooms are just off the main business thoroughfare, in the heart of the wholesale district, and only a stone's throw from depots, post-office, and the large retail stores. Beekeepers and their friends are earnestly invited to make our store their headquarters when in the city.

The best goods and service justify us in promising our customers the fullest measure of satisfaction.

Clover looks most promising for the coming season, and it is the part of wise foresight to anticipate all possible requirements.

E. W. Peirce,

22 So. Third St.

Zanesville, Ohio

To Advertisers of Bees and Queens

The following is addressed mainly to present or prospective advertisers of GLEANINGS IN BEE CULTURE who seek customers among the readers of our columns; and while it is addressed especially to those who wish to advertise bees or queens, it may apply in some respects to other advertisers as well. It is prepared in this form so that any one who receives it may understand that its application is general, and that he alone is not made the subject of special requirements or conditions not required or imposed on others.

The supplying of queen-bees, and to a less extent bees in colonies or nuclei or pound packages, is attended with a good many difficulties not readily understood by those who have not actually had one or more seasons' experience in this trade. To explain this, let us relate from our own experience as queen-breeders, and from the correspondence which reaches us both from our advertising friends and some subscribers to GLEANINGS who have ordered bees and queens from our advertisers or elsewhere.

At the beginning of a season a queen-breeders may have on hand a fairly good stock of queens; but having been reared very late the previous fall he has not had time to test. Another breeder may have on hand a quantity of tested queens, or perhaps a pretty liberal proportion of select tested, or a number of good breeding queens, worth anywhere from \$5.00 to \$10.00. Now, unless the advertiser is very explicit as to the stock on hand, and as to the probable dates when he will be able to begin deliveries, customers may be disappointed greatly in not being able to get the grade of queen wanted from a certain advertiser or on the date expected, and too much care cannot be taken to make the advertising clear and explicit. A number of new advertisers every year get into serious difficulty because their facilities for raising queens being limited, and the price quoted too low for safety they receive orders early in the season which they expect to be able to fill shortly, and accept the money for the same, hoping to supply the stock within a reasonable time. Unfavorable weather may ensue, and they find themselves unable to fulfill their plans, and their customers are indignant and demand their money returned. A good deal of this trouble, which often assumes pretty serious aspects, could be avoided by more care in the wording of the advertisements, occasionally by taking more space. We therefore caution our advertisers to be explicit in their promises as to grades and quantities, and dates when deliveries can be made; and we caution our readers to understand these things before placing orders. It is amazing to learn that beekeepers will order queens from points one or two thousand or more miles away in lots of fifty or a hundred or more, cash with order, without knowing these things. The compliment is appreciated by the publishers of GLEANINGS, showing the confidence in which our advertisers are held; but at the same time, where a small breeder will occasionally make very low prices to establish himself in the trade, careful discrimination should be made in the placing of large orders between the breeder with very limited experience or facilities, and those who have had years of experience and ample facilities for handling large orders. It would be unfair for the publishers to refuse space to a small but worthy queen-breeders simply because his output is very limited, for he may have some very fine stock, and it may be a decided advantage to those who are wanting only a few queens to get them from a small breeder at a moderate price. On the other hand, among the small breeders are occasionally found those who either are unprincipled or so inexperienced that they are not worthy of the confidence of our readers; and to make a distinction between these we require of all advertisers the most definite and explicit information in regard to their plans. We must know of every one securing space in our columns how large a yard he has from which he expects to raise queens; what breeding stock he has; when he expects to begin deliveries; and, more than all this, we must have reliable information as to the character of the advertiser; whether he will properly take care of orders placed in his hands, and promise to return promptly on request funds which have been placed in his hands for certain orders. Unless this information is fully supplied we shall decline the use of our columns to any one unwilling or unable to furnish it.

THE A. I. ROOT CO., MEDINA, O.

HONEY-CANS

We have made especial efforts this season to supply our patrons with cans and cases of the finest quality, and we have now in our warehouse a complete stock ready for immediate shipment to you.

There is much satisfaction in knowing that there is a dependable source of supply so near to all Texas Beekeepers, and others in the great Southwest. Experience has taught us to anticipate properly the needs of our patrons, and we have as yet failed to fall down at a critical time. Sometimes we feel that it is not wise for Beekeepers to trust entirely to the supply house for eleventh-hour assistance, but we concentrate our energies, nevertheless, on complete preparation, and when you are ready we are. Write us for prices.

Weed's New Process Comb Foundation

We have made extensive improvements in our comb-foundation factory this season at a great expense, and are now operating day and night under the supervision of a man direct from the A. I. Root Company, who has had many years of experience in the manufacture of this product. When placing your order with us you are assured of receiving Comb Foundation of unexcelled quality.

A full line of Root's Beekeepers' Supplies on hand at all times ready for immediate shipment.

Toepperwein & Mayfield Co.

Nolan and Cherry Sts.

San Antonio, Texas